Construction Metho

APRIL 1949

A McGRAW-HILL PUBLICATION

0-Ft. Tower Rig Drives New Type Steel and Concrete Piles for Staten Island Ferry House

GEARED to the Concrete

The deep, reversed, double-helical ribs of Inland HI-BOND reinforcing bars grip the concrete with an interlocking action that provides unequaled bonding strength.

Engineering tests have proved that straight embedments of HI-BOND have a greater bonding effectiveness than bent-bar anchorages of ordinary deformed bars. And, with ordinary bars, the low bonding strength of the bar has always been the weak link in the structure—the bar would slip before the steel or concrete could be fully loaded. With its high bonding strength, HI-BOND bars make it possible not only to use more of the potential strength of the steel but also to take advantage of the higher compressive strength of present-day concretes. As a result, HI-BOND is leading the way to radical revisions in present building codes.

The present demand for HI-BOND greatly exceeds our ability to supply it. However, to make larger tonnages available to you, we have licensed other steel companies to make this superior bar. Write for booklet.

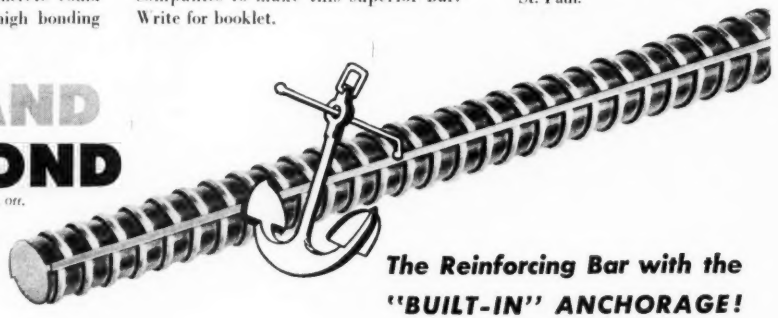
INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill.

Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

INLAND

HI-BOND

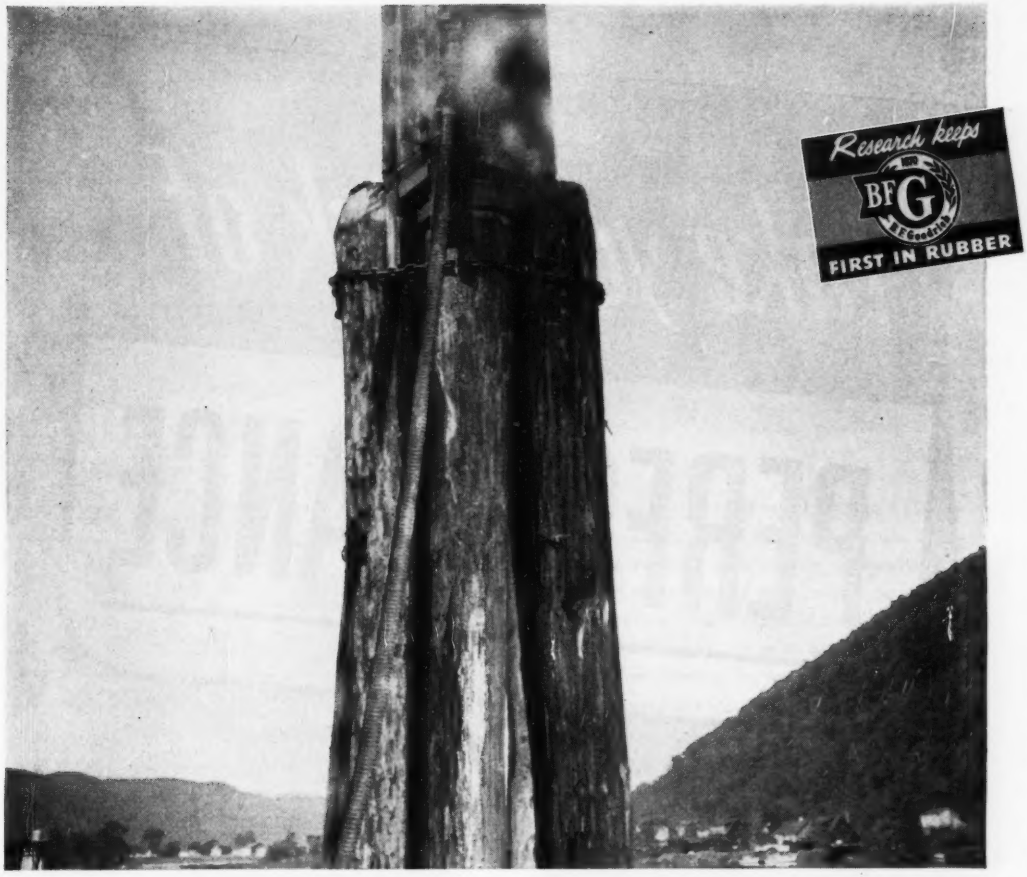
Reg. U. S. Pat. Off.



INLAND STEEL

The Reinforcing Bar with the "BUILT-IN" ANCHORAGE!

OTHER PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP • TIN PLATE • FLOOR PLATE • PILING • RAILS • TRACK ACCESSORIES



Ends hazards of scalding and injury from bursting hose wall

B. F. Goodrich Burstproof hose can't be burst by steam

BURSTPROOF steam hose (developed and perfected by B. F. Goodrich) is accurately named—*it is completely burstproof.* Steam or steam pressure cannot burst the hose wall; this hose can only be ruptured by a blow from outside that actually *cuts* the wire reinforcement.

Burstproof hose has no cotton fabric to burn, char, and give way. High-tensile steel wire takes the place of the fabric plies, which in other hose burn and then collapse. Here is a hose as strong and safe as steam hose can be made.

Rubber compounded to beat the heat —Heat is the enemy of steam hose. The tube in BFG Burstproof is specially compounded for safety, to resist deterioration at high temperatures. The B. F. Goodrich anti-oxidant Agerite keeps the tube live and elastic, with sufficient "flow" to allow the steel wire reinforcement to anchor itself in the rubber. A braid of strong asbestos cord (woven asbestos fabric in some sizes) imbedded just under the cover, protects it from chars and burns, protects the worker who handles it.

Armored with steel—The steel wire reinforcement is braided at the angle of greatest strength. Multiple wire strands are paralleled, to give more strength than a woven tape. Braid openings permit the wire braid to "rivet" itself to the layers of rubber, thus increasing strength and safety. Wire winding in the larger sizes is useful in resisting sharp bends or kinks.

BFG Burstproof is the safest, strongest hose in steam service. Recommended especially for saturated steam pressures up to 200 p.s.i., for superheated steam up to 388° F., and for all applications that are hard on steam hose. See it at your local distributor or write: *The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

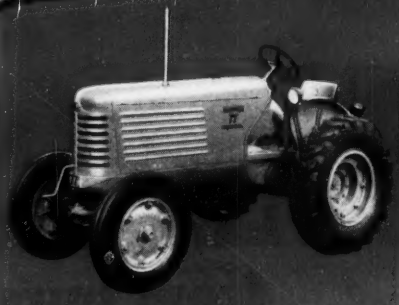
B.F.Goodrich

BURSTPROOF STEAM HOSE

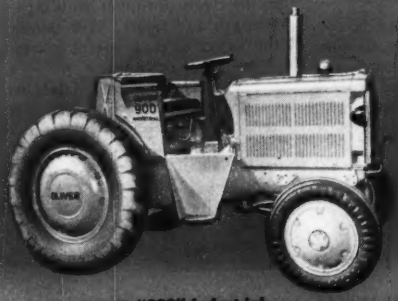
take your pick of

PERFORMANCE

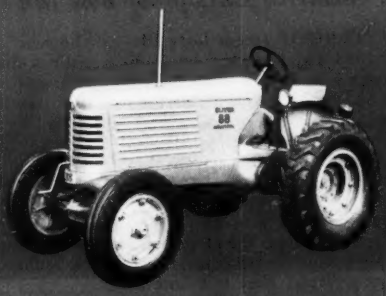
OLIVER "60" Industrial



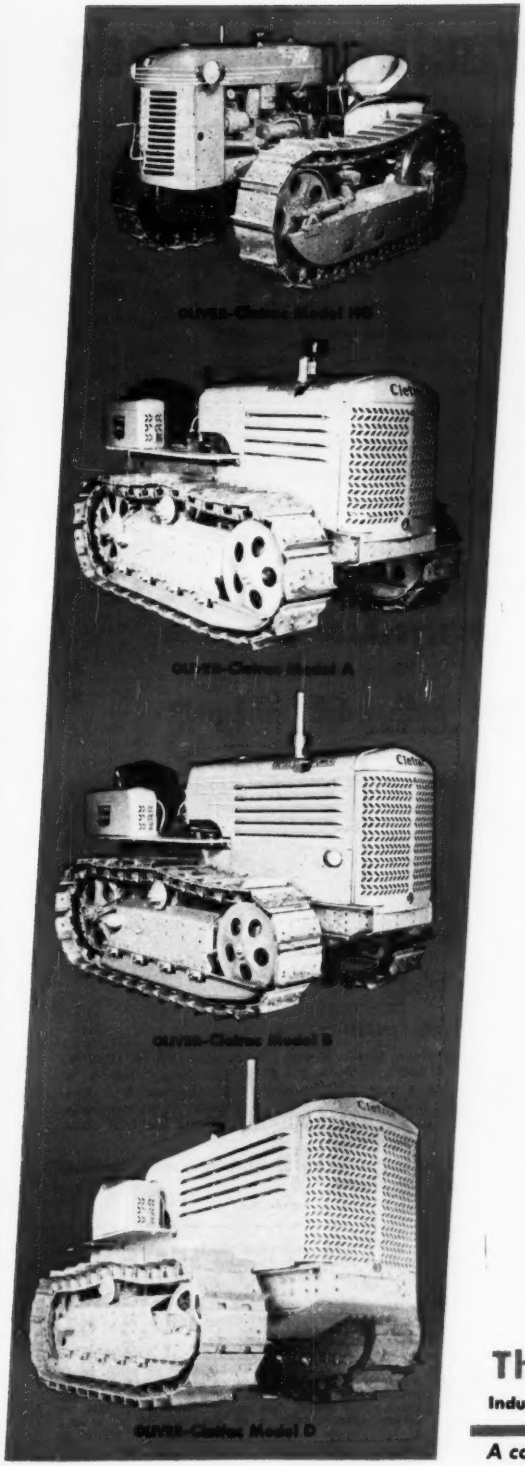
OLIVER "77" Industrial

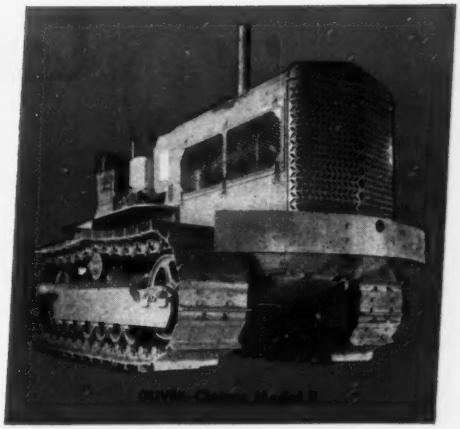


OLIVER "900" Industrial



OLIVER "88" Industrial





From the complete line of Oliver "Cletrac" Crawler Tractors and Oliver Industrial Wheel Tractors you can pick exactly the tractor you need and be assured of performance *in advance.*

The finest in industrial machinery is more than a slogan to Oliver . . . it is an accomplished fact that has been proved in year after year of outstanding performance. Design, materials, workmanship, and plant equipment are all based on one standard . . . the built-in dependability that adds up to more years of service in the field . . . lower operating and maintenance costs to you.

Combine this unsurpassed dependability with the *extra* service offered by your Oliver "Cletrac" Distributor . . . a complete line of industrial crawler and wheel tractors . . . a full line of allied equipment . . . complete service facilities and adequate stocks of genuine Oliver "Cletrac" repair parts . . . plus a broad background of field experience . . . and you'll see why you can take your pick of performance.

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Cletrac
SALES
SERVICE

Cletrac

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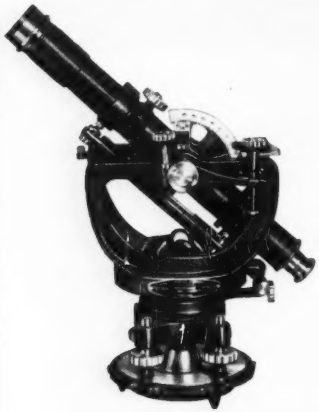
A complete line of Crawler and Industrial Wheel Tractors

Avoid COSTLY ERRORS

Save Time and Money



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YOU'LL be time and money ahead if you use a David White Universal Level-Transit in all your survey and checking operations — building and road construction. It is a low-cost, accurate, rugged instrument. Quickly converts from level to transit. Designed to provide maximum strength and protection — assuring you constant precision.

Among its many features are: Full 12" telescope with 25 power coated optics, a patented ball-bearing race, lock and release lever system, easy perfect alignment adjustments, guarded horizontal circle, vernier accurate to 5' vertical arc 3" diameter. Write today for complete information and the name of our nearest dealer.

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Manufacturers of Instruments for Engineers, Surveyors and Builders

343 West Court Street Milwaukee 12, Wis.

Construction Methods

ESTABLISHED 1919

Volume 31 — **APRIL 1949** — Number 4

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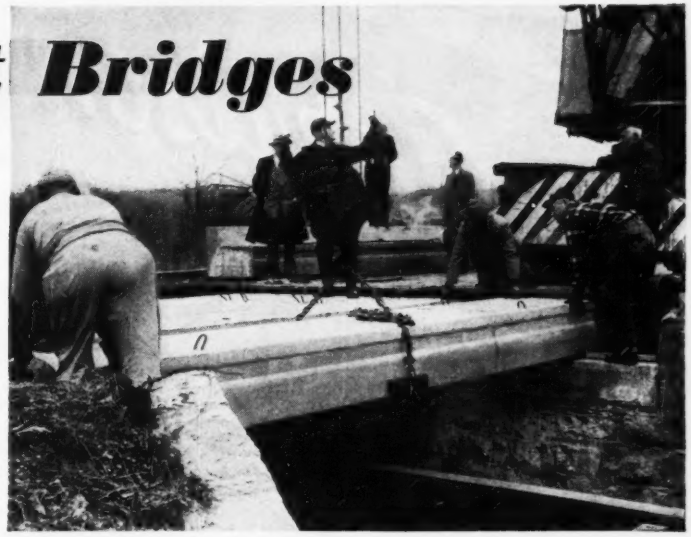
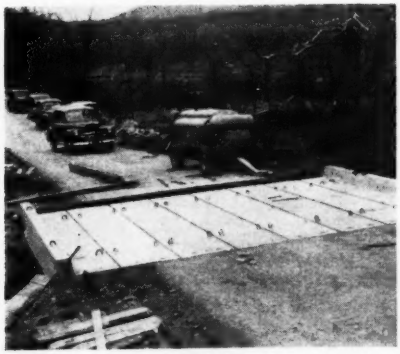
Precast Bridges



Setting precast bridge members in place . . . new, permanent bridge installed in less than 3 hours. Guard rail and wearing surface placed later.

Pennsylvania Highway Department replaces outmoded bridges on secondary road system with precast concrete structures

Members fabricated with 'Incor' Air-Entraining Cement



ON THE alert for ways and means of reducing today's construction costs, the Concrete Products Co. of America, in cooperation with the Pennsylvania Department of Highways, has developed a method of precast concrete bridge construction which is producing outstanding results. Following exhaustive tests, 14 bridges, with spans up to 24 ft., have been ordered in the last few months, and spans up to 36 ft. are now contemplated.

As the Pennsylvania Department of Highways uses air-entraining cement in highway construction, the Department approved the use of 'Incor'* Air-Entraining 24-Hour Cement in fabricating the bridge members. Faster, thorough curing and quicker re-use of specially designed forms helped speed economical production. Vacuum process was used to reduce water content of the placed concrete.

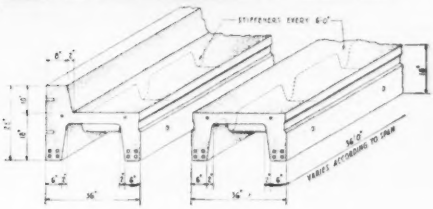
With literally thousands of bridges throughout the country in need of replacement, this speedy, economical method of minimizing traffic disruption and lengthy detours has a tremendous field of usefulness.

*Reg. U. S. Pat. Off.

Owner: **PENNSYLVANIA DEPARTMENT OF HIGHWAYS**

Precast bridge members fabricated by: **CONCRETE PRODUCTS CO. OF AMERICA**

Philadelphia, Pottstown, Pittsburgh, Williamsport, Pa.



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"INCOR" HIGH EARLY STRENGTH PORTLAND CEMENT
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,000,000 BARRELS ANNUAL CAPACITY

On Garrison Dam It's

Contractors and engineers are using the most modern earth moving equipment—and lots of it—to build the world's greatest rolled earth fill dam on the Missouri River in North Dakota. Garrison Dam—scheduled for completion in 1953—will be 210 feet high and will have a crest length of 12,000 feet. A total of 75,000,000 cu. yds. of earth and rock fill will be required for the embankment.

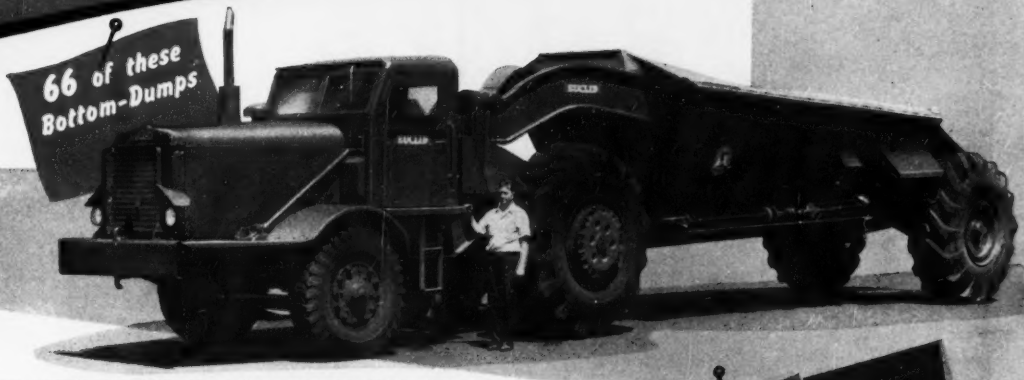
Euclid equipment gets the call again at Garrison Dam! Sixty-six Bottom-Dump and 3 Rear-Dump Euclids, 5 Euclid Loaders and 3 water wagons will soon be on the job . . . hauling more and bigger loads at less cost . . . providing dependable, long-life service at low maintenance cost under a wide range of operating conditions.

A big, tough job—Garrison Dam! It's part of a tremendous project of the Corps of Engineers to eliminate destructive floods and harness rivers of the Missouri Basin for irrigation and hydro-electric power. A tough job, yes, but typical of hundreds of construction, mining, and industrial projects where "Eucs" have proved their ability to stay on the job, efficiently and dependably, day after day.

EUCLID THE PIONEER

EUCLIDS

EUCLID all the way!



PETER KIEWIT SONS' CO. & MORRISON-KNUDSEN CO.
DEPEND ON EUCLIDS!

For their 20,000,000 yd. contract these contractors standardized on Euclid equipment because they know from experience that "Eucs" move more yards more profitably. For hauling the bulk of the earth and gravel, 66 Bottom-Dump Euclids of 25 cu. yd. capacity will be used. These units are powered by Butane engines of 300 h.p. and have a loaded top speed of 28 m.p.h. Drive and trailer tires are 27.00 x 33. Using the same model Euclid tractor as the Bottom-Dumps, 3 water wagons of 10,000 gallon capacity will be used on the fill and haul roads.

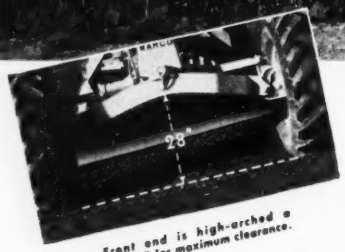
The big fleet of Bottom-Dumps will be kept busy by 5 Euclid Loaders working in the huge borrow pits. One of Euclid's more recent developments, the Loader has established many new production records on dozens of airport, dam, and highway jobs... the wide cutting blade and 54" belt really load dirt fast! Rear-Dump "Eucs" of 22-ton capacity will haul heavy excavation—these are powered by 300 h.p. engines and have a top speed of 27.7 m.p.h. with full payload. **Yes, it's Euclid all the way at Garrison!**

The EUCLID ROAD MACHINERY Co., Cleveland 17, Ohio

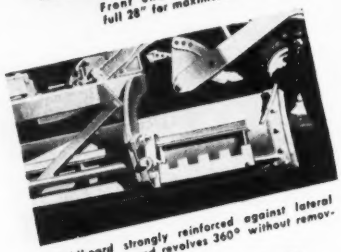
Move the Earth

NEW 100 HP

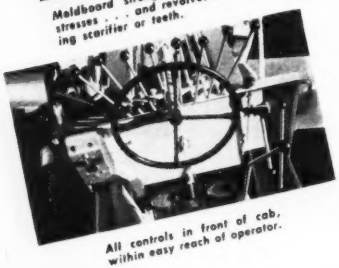
HEAVY-DUTY WARCO® 4D-100



Front end is high-arched a full 28" for maximum clearance.



Moldboard strongly reinforced against lateral stresses . . . and revolves 360° without removing scarifier or teeth.



All controls in front of cab, within easy reach of operator.

THE WARCO MOTOR GRADER WITH...

- more work-power
- less operator fatigue
- every "on-the-job" advantage

Here's the 100 H.P. HEAVY-DUTY WARCO MOTOR GRADER that does MORE work in LESS time. Its advanced design and engineering . . . by the originators of hydraulic motor graders . . . result in a new high "on-the-job" accomplishment. And it's a honey to operate, even in roughest going.

Just add up these WORKING ADVANTAGES: *finger-tip* blade control . . . *accurate and positive adjustment* of blade and scarifier . . . *360° blade rotation* without removing scarifier or teeth . . . *sliding moldboard* for extra reach . . . *8 overlapping speeds* forward, 2 reverse. These and many other WARCO bonuses add up to just one thing . . . WARCO 4D-100 has EVERYTHING YOU WANT in your next heavy-duty motor grader.

SEE YOUR WARCO DEALER . . . It won't take long for him to show you that *this new 100 H.P. WARCO is in all ways your best motor grader buy.*

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BUILDERS OF WARCO MOTOR GRADERS • HERCULES ROAD ROLLERS

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★ For SPEEDY running and removing of NUTS, BOLTS, CAP SCREWS, LAG SCREWS up to ⅜" thread size.

★ Makes SHORT WORK of removing FROZEN, RUSTY nuts and bolts!

★ SAVES time and labor in Metal Fabricating; Assembly Lines; Engine and Machinery Rebuilding; Garages; Truck Fleets; General Maintenance; Railroads, etc.

★ Weighs ONLY 8¼ lbs.—yet has DRIVING CAPACITY of conventional nut runner weighing almost 30 lbs.—a tremendous saving!

★ DELIVERS 2000 BLOWS per minute to hammer fasteners loose or drive them home—in a few seconds! (Free running speed: 1600 R. P. M.)

★ Operator fatigue reduced to AMAZING MINIMUM . . .

NO { jarring / twisting / fighting the wrench

★ So WELL-BALANCED, operator can control Wrench by holding it *lightly* with one hand.

★ Trigger switch for easy operating control, right or left hand. Toggle reversing switch positioned for fast, convenient thumb operation. FORWARD—REVERSE—in an INSTANT!

★ Famous full-powered B&D-built motor CAN'T BE STALLED—even when spindle is stopped dead—no danger of overload or burn-out!

IF you've ever "ridden" a heavy nut runner all day long, you know what a difference this light-weight, high-powered sturdy Impact Wrench makes in time-saving, fatigue-saving, cost-cutting! Ask your nearby Black & Decker Distributor for a demonstration. Write for free, descriptive literature to: The Black & Decker Mfg. Co., 659 Penna. Ave., Towson 4, Md.

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PLYFORM
CONCRETE FORM PANEL
INTERIOR-TYPE GRADE B-B
D.F.P.A. INSPECTED

*The highly moisture-resistant (but not waterproof) glues used in PlyForm permit multiple re-use of panels (as many as 10 to 15 are not unusual). For the greatest possible panel re-use, however, specify Exterior-type Concrete Form grade of Douglas fir plywood—bonded with completely waterproof phenolic resin adhesive. For special architectural concrete, requiring the highest possible finish, the architect or contractor may specify Exterior-type or Interior-type Douglas fir plywood in grades having "A" (Sound) face veneer—or one of the new resin-impregnated overlay panels.

MEETS NEW GRADE SPECIFICATIONS . . . PlyForm—the multiple re-use concrete form panel of Douglas fir plywood—is now manufactured in strict accordance with the new grade specifications set forth in U. S. Commercial Standard CS45-48. Both faces are of B (Solid) veneer—smooth and firm, meeting virtually all concrete construction requirements.

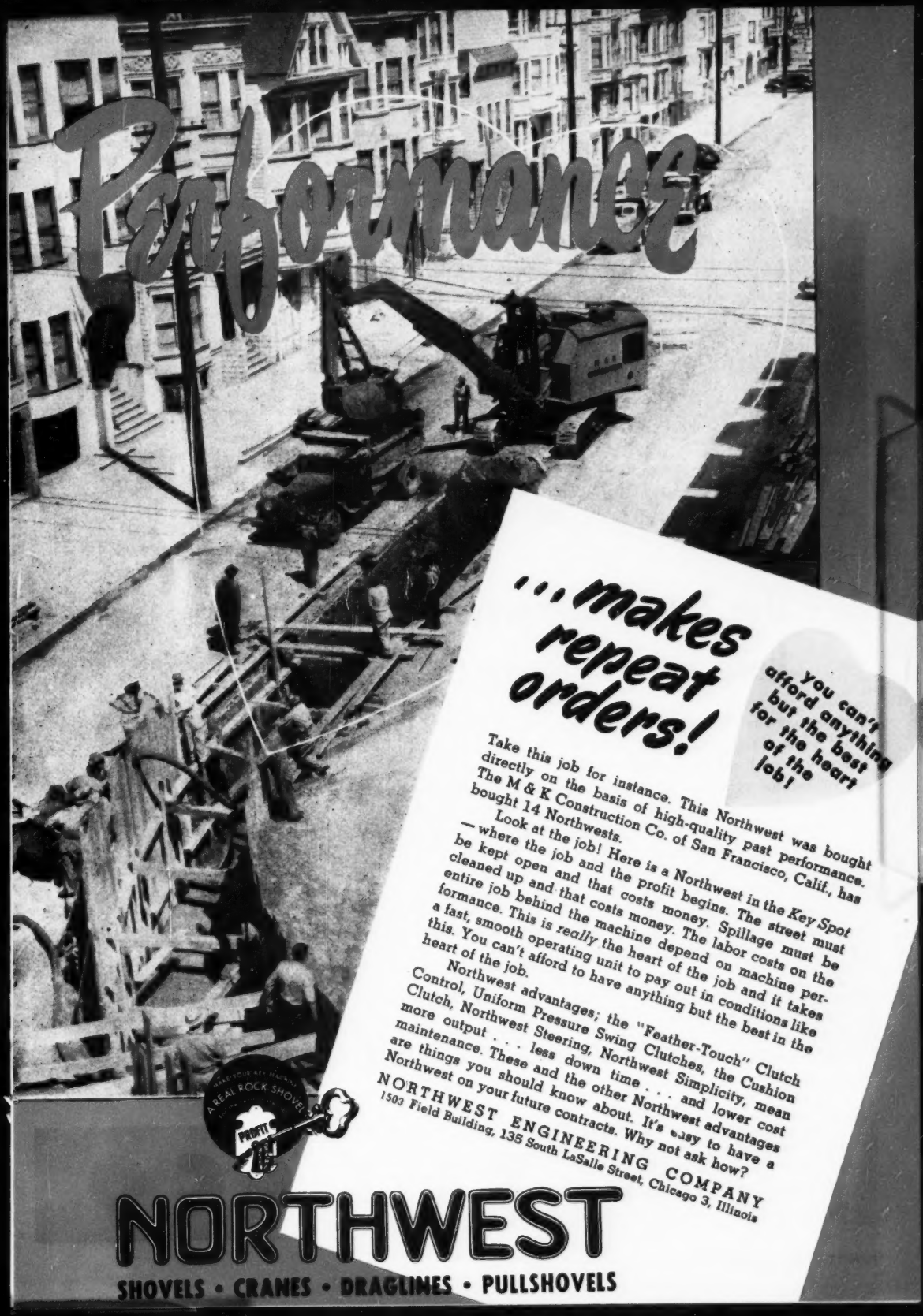
OFFERS OUTSTANDING ADVANTAGES . . . PlyForm's superior ply construction, plus the highly moisture-resistant glues* which bond the plys, make it ideal for multiple re-use form work. The large panel sizes go up quickly, are light and easy to handle, hold nails firmly, are easy to work with hand or power tools. PlyForm is strong, rigid, puncture-proof, water and mortar tight. The smooth, solid panel faces produce concrete surfaces that are free from joints and fins, smooth and easy to finish. PlyForm panels are sanded both sides, edge-sealed with a distinctive green sealer, and mill-oiled unless otherwise specified.

Send for these booklets

Two booklets: "The New PlyForm" and "Concrete Forms of Douglas Fir Plywood" are now available. They will help you gain the full advantages offered by Douglas fir plywood concrete form panels. Write the Douglas Fir Plywood Association office nearest you: Tacoma Building, Tacoma 2, Washington; Shoreham Building, Washington 5, D. C.; Daily News Building, Chicago 6; The 500 Fifth Avenue Building, New York City 18.

Douglas Fir
PLYWOOD
LARGE, LIGHT, STRONG

Real Wood **Panels**


Performance
...makes repeat orders!
you can't afford anything but the best for the heart of the job!
Take this job for instance. This Northwest was bought directly on the basis of high-quality past performance. The M & K Construction Co. of San Francisco, Calif., has bought 14 Northwests.
Look at the job! Here is a Northwest in the *Key Spot* — where the job and the profit begins. The street must be kept open and that costs money. The labor costs on the cleaned up and that costs money. The machine depend on machine performance. This is *really* the heart of the job and it takes a fast, smooth operating unit to pay out in conditions like this. You can't afford to have anything but the best in the heart of the job.
Northwest advantages; the "Feather-Touch" Clutch Control, Uniform Pressure Swing Clutches, the Cushion Clutch, Northwest Steering, Northwest Simplicity, mean more output . . . less down time . . . and lower cost maintenance. These and the other Northwest advantages are things you should know about. It's easy to have a Northwest on your future contracts. Why not ask how?
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PROFIT
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SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

CUT YOUR COMPRESSOR OPERATING COSTS

Use Texaco compressor oils and keep valves clean — pressure up

FOR compressors of every type and size, and for every operating condition, there is a Texaco oil that will keep valves clean, and assure full volume and pressure with minimum cost for upkeep.

For *normal* operating conditions, use *Texaco Cetus, Alcaid or Algol Oils.* They are highly refined, specially processed oils that won't form harmful carbon or gummy deposits. They assure clean valves, free rings, open ports and clean air lines — are used by operators the world over.

For compression of *wet* air, use *Texaco Regal Oils (R & O).* These turbine-grade oils give full protection against wear and, in addition, guard against rust even during idle periods and in intermittent operation.

Protect your drills by using *Texaco Rock Drill Lubricants EP.*

Keep hydraulic systems free of sludge and rust by using *Texaco Regal Oils (R & O).*

A Texaco Lubrication Engineer will gladly help you select the Texaco lubricants you need for best results. Call the nearest of the more than 2300 Texaco Wholesale Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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TEXACO STAR THEATRE
presents MILTON BERLE
every Wednesday night.
See newspaper for time
and station.

TEXACO

TEXACO

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

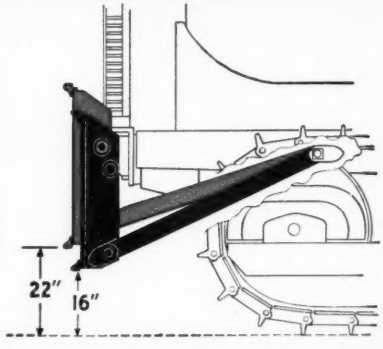
HD-19 TORQUE

OUTPUSHES

. . . On Any Job, Any Time

***Shortens* Time in Cut.** You get heaping loads fast with the BIG HD-19 pushing. A powerful, 40,000 lb. tractor with long, wide, sure-gripping tracks . . . it gets in there and really "bears down."

What's more — makes contact faster with any make or type scraper combination — no trundling along behind trying to catch up. Hangs on, too, throughout entire loading period — no losing scraper, no sudden, jarring contacts because there's no stopping to shift. Torque Converter automatically synchronizes HD-19's speed with speed of loading unit. And with a final, extra boost, gets scraper off to fill with a flying start. Result — MORE YARDS MOVED AT LESS COST PER YARD.



NEW HEAVY-DUTY, ADJUSTABLE PUSHER PLATE NOW AVAILABLE FOR HD-19. It's bigger, stronger, heavier — weighs 1,600 lbs. It's adjustable — operates at 16" or 22" above ground . . . pushes any make scraper or self-powered hauling unit.

CONVERTER TRACTOR

OUT-'DOZES

Of Year, Under Any Conditions

***Shortens* Time on Every Bulldozing Job.** The heavier, sure-footed, better-balanced HD-19, working with especially matched bulldozers — plus having the advantages of the Torque Converter drive — assures greater output on bulldozing. Operator can take a deeper cut, roll bigger loads faster . . . and get back for the next pass quicker — has a high reverse of 5.5 m.p.h. Load and terrain and use of throttle govern forward speed . . . and there's no worrying about engine stalling when tractor is overloaded — keeps running, regardless.

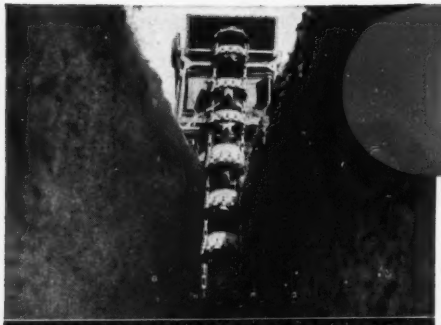
And because the HD-19 is on tracks it can be used everywhere on the job — on wet, sandy or rocky going . . . no job too tough for it to handle. "Seeing is believing" . . . watch it outperform. Contact your Allis-Chalmers dealer.

ALLIS-CHALMERS

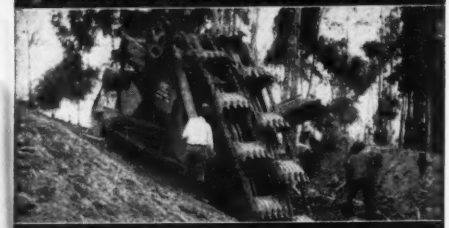
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

ORIGINATOR OF THE TORQUE CONVERTER TRACTOR

PARSONS



CLEAN-CUT SMOOTH WALLS are characteristic of Parsons trenches. Hand trimming is unnecessary. Parsons arched-frame construction prevents cave-ins by putting crawlers on solid ground, well ahead of buckets.



POWER TO DIG DOUBLE TRENCHES is built into the 310 Trenchliner. It will handle two bucket lines, dig a 6' box sewer at one pass. With short and long boom, it can dig step trench in single operation.

CUT WITHIN 10" of fences, trees, buildings, with Parsons Ladder Trenchliner (22) illustrated). Off-set boom, shiftable across the full width, lets Trenchliner side-step obstructions.

7 Outstanding Trencher Improvements
All originated and developed by Parsons

1. **Ladder Boom Shifts from Side to Side . . .** it shifts easily, smoothly, because, on Trenchliner, it rides on rollers.
2. **Ladder Boom Telescopes . . .** Digging depth is quickly changed. Telescope locks securely at points of adjustment.
3. **Conveyor Deposits to Either Side . . .** Shifts easily and quickly. Arc makes it easy to reach up over truck bodies.
4. **Power Flow Simple, Direct . . .** gets maximum power to the digging end. Easy to control, simple to maintain.
5. **All Gears Completely Enclosed . . .** machine-cut gears, alloy shafts, in one closed case, in continuous oil bath.
6. **Shovel Type Crawler . . .** Each individual shoe strong enough to carry entire load of Trenchliner. Self-cleaning.
7. **Trenchliner Frame is Arched . . .** Improves digging and travel balance. Distributes weight on solid ground, well ahead of buckets.

Add up all 7 and you get lower cost per foot or per mile.

KOEHRING PRODUCT

PARSONS COMPANY

NEWTON, IOWA
KOEHRING SUBSIDIARY

TRENCHLINERS*

*Reg. Trademark

MILE-A-DAY TRENCHING PLUS BETTER TRENCH-BOTTOM GRADE CONTROL. Parsons new 200 Wheel Trenchliner, designed especially for pipeline work, farm and railway drainage, can step along at a mile-a-day pace, digging a 5'-6" trench 15" to 36" wide. Fine grading of trench bottom, important in pipeline and drainage work, is greatly simplified by the more flexible "Double Pivot" mounting of the husky wheel.

KWIK-MIX Bituminous MIXERS

End Discharge Speeds Patch Work

Kwik-Mix bituminous mixers are easily adaptable from portable, rubber-tired machines to stationary plant operation. One man handles complete operation of either 10 or 14 cu. ft. models. Other advantages include easy loading, non-tilting drum, fast and thorough mix, accurate control.

KWIK-MIX COMPANY
Port Washington, Wisconsin

JOHNSON Single Silo FOR BIG STORAGE

1590 Barrels Capacity, Yet It's Portable

Provides capacity for 254, 373 or 492 bbls. Screw conveyor and bucket elevator, box car or truck receiving hoppers, electric bin signals, aeration diffusers. Takes one or two 1000 bbl. batchers. Write for more facts.

C. S. JOHNSON COMPANY
CHAMPAIGN, ILLINOIS

KOEHRING for PULL SHOVELS

Wide Trenches Need No Shoring

When soil conditions call for wide trenches, when rocks and boulders make use of trencher impractical, check on Koehring Pull Shovels. Available in ½ yard, ¾ yard and 1½ yard sizes. Fully convertible to shovel, crane or dragline when trenching job is done. Heavy-Duty.

KOEHRING COMPANY
MILWAUKEE 10, WISCONSIN

GIANT Gelatins

ATLAS Gelodyns

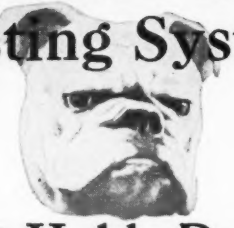
ATLAS Gelatin

ATLAS Coalite

These ATLAS Products Make Possible The

ROCKMASTER Blasting System

ATLAS Apex



That Holds Down Blasting Costs!

ATLAS Amodyns

MANASITE

ATLAS Extra Dynamite

ROCKMASTER Detonators

Equipment, explosives, blasting supplies, labor and drilling costs are up these days! But on many a blasting job, over-all costs are being held down by ROCKMASTER—the original milli-second delay blasting system pioneered by Atlas. ROCKMASTER, geared with the right explosive, makes possible outstanding savings through improvements in fragmentation and control of throw . . . and greatly decreased noise and vibration. This adds up to lower *over-all* costs!

ROCKMASTER is designed to "fit like a glove" these other Atlas developments that have made Atlas a leader in the field of explosives. Your Atlas representatives will be glad to show *you* how to make the most of ROCKMASTER advantages.

Rockmaster, Manasite, Gelodyn, Amodyn, Apex, Coalite—Reg. U. S. Pat. Off.

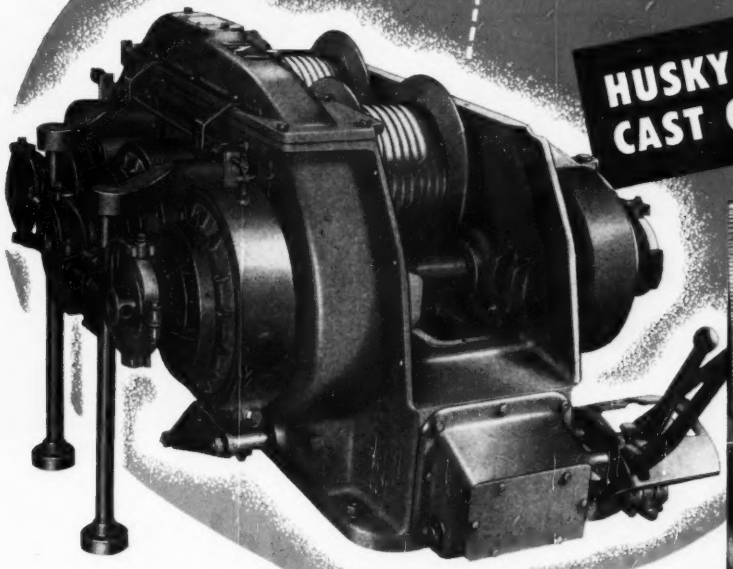
ATLAS EXPLOSIVES

"Everything for Blasting"

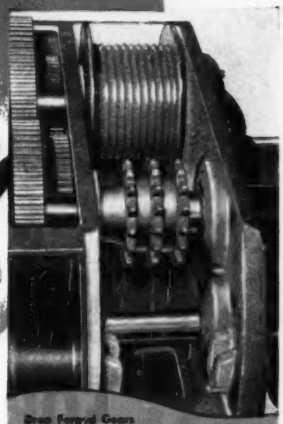
CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

THE "HEART" of Every UNIT



HUSKY ONE-PIECE CAST GEAR CASE



Drop Forged Gears . . . Involute Splined Shafts . . . All alloy steel and heat treated! Involute splines provide greater strength and eliminate wear . . . No keys to replace . . . No worn-out keyways. Forging "heats" toughness into these gears. Shafts are accurately ground for perfect alignment, . . . and gears are precision cut to close limits.

EXCLUSIVE WITH UNIT!

- All gears and shafts are completely enclosed in a constant flow of oil . . . positive protection for all moving parts . . . no chance for dust or dirt to cause abrasive wear.
- Bored for perfect alignment by a machine designed specifically for this accurate operation . . . misalignment is impossible.
- Self-lubricating . . . this case eliminates the need for frequent greasing or adjustment.
- All clutches are smooth operating, disc type, and completely interchangeable. Mounted on the higher speed countershafts instead of directly to drum shafts . . . a modern, approved engineering practice.

Easy to service from all sides . . . Fewer parts . . . Lower maintenance costs! Gasoline or Diesel engines are mounted "straight-in-line" with main machinery in every model . . . Crawler or "rubber-tired" mobile UNITS available.

½ and ¾ Yard Excavators — Cranes . . . up to 15 tons

UNIT CRANE & SHOVEL CORP.

6305 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN U. S. A.

SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

A 5330-1P-C

LaPLANT-CHOATE

GOOD BEFORE

Getting a 17½-yard heaped load in a hurry is standard practice for the Improved LPC Motor Scraper with its curved bowl bottom and offset cutting edge.

Improved

FOR INCREASED PRODUCTION

A few of the new features that cut down-time and increase hourly earnings

- NEW Heavy Duty Constant Mesh Transmission
- NEW 32-amp. Generator
- NEW 12 cu. ft. Piston Type Compressor
- NEW and Improved CCU and Controls
- NEW Water Pump and NEW Cast Type Radiator for More Efficient Cooling
- NEW Simplified Starting System—dash controlled

PLUS all these original high production features

- Big Capacity—17½ yards heaped
- Big Power—225 H.P. Diesel—16 H.P. per struck yard capacity
- Big Brakes—22" x 7" 4-wheel—air
- Positive Hydraulic Steering—Double Acting
- High Speed—up to 19.25 m.p.h.
- Easy Loading—curved bowl bottom—offset cutting edges
- Positive Forced Ejection plus high apron lift

6, 8 and 14-yd. cable scrapers for any make of track type tractor.

2 and 4-yd. hydraulic scrapers for track type tractors.

2 and 4-yd. hydraulic scrapers for industrial rubber-tired tractors.

LaPLANT CHOATE

MOTOR SCRAPERS BETTER NOW

Positive forced ejection and high apron lift, with the improved cable control, insures fast, accurate spreading. No time wasted in jockeying apron or tail gate to eject sticky material.

and lower operating and maintenance costs

Now you can have an even better LPC Motor Scraper, improved at every point so you can be sure it will stay on the job continually — complete your job on schedule — and assure good profits!

Increase production and profits — with the new transmission, you can use *all* of the 225 H.P. to handle capacity loads, at top speeds, up and down grades, even in tough operating conditions. Figure the added profit at your own bid prices of one additional load per hour over 10,000 hours of operation. The new 32-amp. generator provides all the "juice" needed for 'round the clock operation. Bigger air compressor for greater air output and more intermittent compressor operation. Improved cable control unit and controls save valuable seconds — give accurate spreading control.

24:00 x 29 24-ply traction type tires—interchangeable front and rear. 21:00 x 29 also available.

Add these and other new and improved features to the original proven high production features and you'll see why LaPlant-Choate Motor Scrapers give you the lowest possible cost per yard — per hour — per day for the long life of the unit.

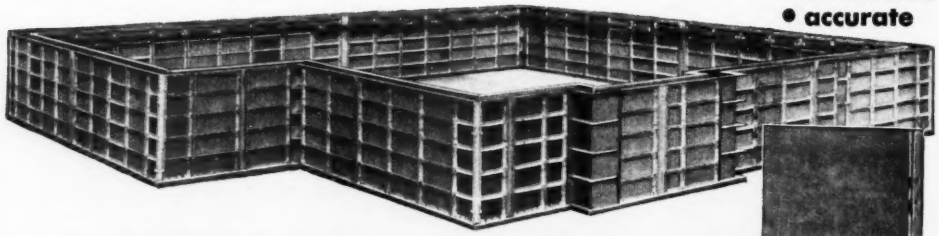
Ask your nearest LPC distributor to show you a Motor Scraper in operation and for the complete details of all the improvements which mean more profitable earthmoving for you. LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa — 1022 77th Ave., Oakland, Calif.

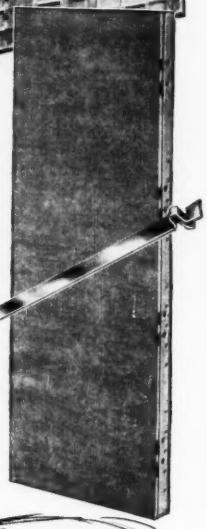
HIGH SPEED EARTHMOVING EQUIPMENT

UNI-FORMS take the *Guesswork* out of Forming!

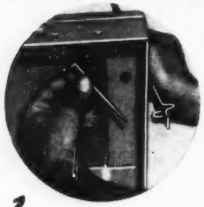
They're

- modern
- easy to use
- automatic
- accurate

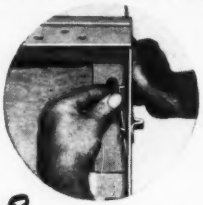




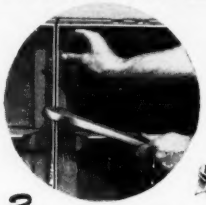
ASSEMBLY OF UNI-FORMS IS FOOLPROOF . . . YOU CAN'T MAKE A MISTAKE



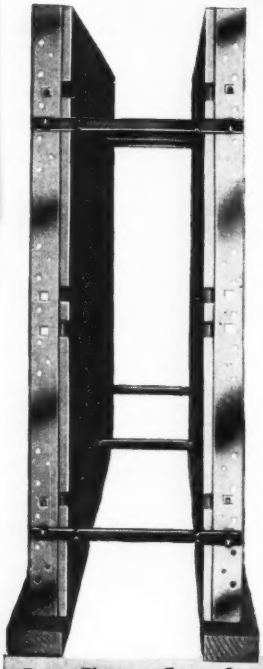
1 The first step in assembly. Put the Uni-Form Tie Loop into the Tie Hole.



2 Drop Tie Key into the Loop. This locks the UNI-FORM and Tie into one integral unit.



3 Bring the next UNI-FORM into position. Drop the second Tie Key into the Loop.



UNI-FORMS Provide Modern, Mechanized, Automatically Accurate Forming

Bigger Profits . . . Better Jobs

UNI-FORMS fit the modern building picture . . . they provide speed, quality and lower building costs. Walls, slabs, beams, columns—in fact any concrete, is UNI-FORMABLE.

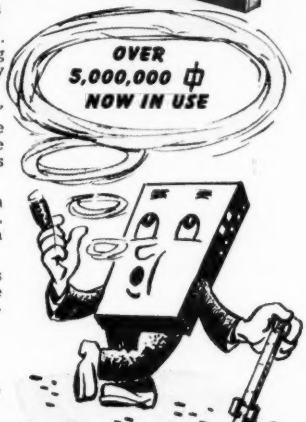
UNI-FORMS are modular in design . . . 2'0" wide, in varying height up to 10'0". They are symmetrical . . . all sizes will member with one another. Fillers are easily handled with angles punched to match the forms.

UNI-FORMS, with Uni-Form Ties, comprise a structural form, ready to receive concrete . . . automatically accurate wall widths from bottom to top . . . alignment on one side only.

UNI-FORMS are not like ordinary wall forms —they are *permanent* equipment . . . only the plywood is expendable—steel frame is indestructible. Many have seen 20 years of service.

Rent a set of UNI-FORMS with a purchase option. "Try before you buy" is our motto.

Ask for Circular SA-13. It gives full information on the Uni-Form System.



UNIVERSAL

Form Clamp Company

FOUNDED 1912

1238 N. KOSTNER **CHICAGO 51**

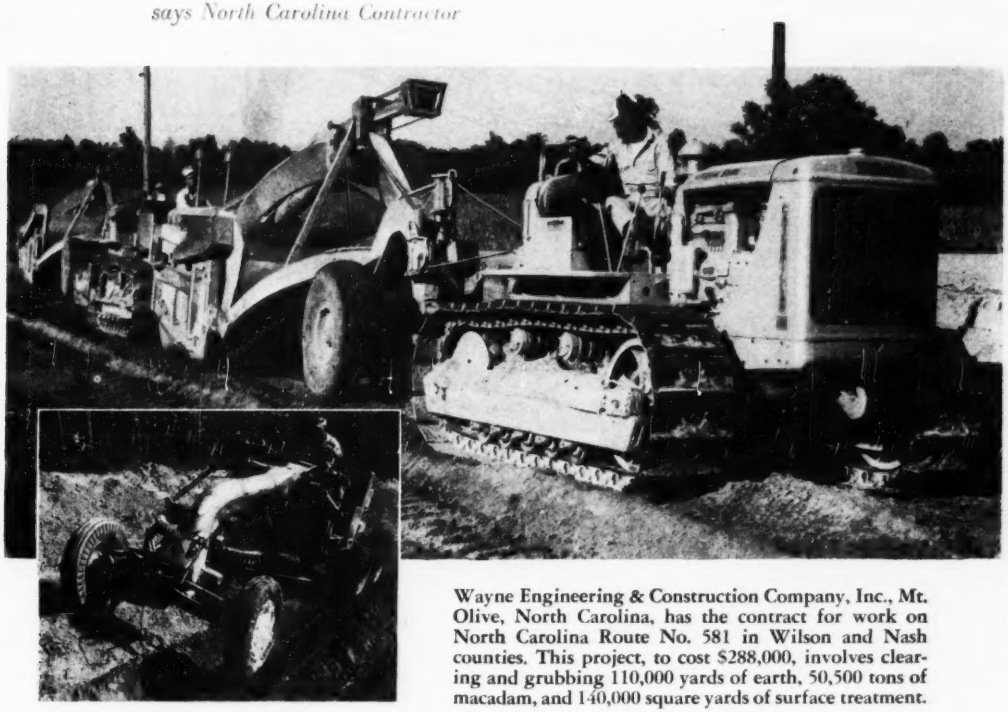
Form Ties **Form Systems** **Form Clamps** **Spiroloçs** **Twistyes** **Concrete Specialties**

"Better equipment performance

with **GULF QUALITY LUBRICANTS and FUELS**

helps us beat contract schedules"

says North Carolina Contractor



Wayne Engineering & Construction Company, Inc., Mt. Olive, North Carolina, has the contract for work on North Carolina Route No. 581 in Wilson and Nash counties. This project, to cost $288,000, involves clearing and grubbing 110,000 yards of earth, 50,500 tons of macadam, and 140,000 square yards of surface treatment.

WAYNE Engineering & Construction Company, Inc., like many other leading contractors, has a proven formula for making equipment deliver beat-the-schedule performance: Gulf quality petroleum products, plus careful maintenance. This formula has paid big dividends over a period of years.

Always of the same uniform high quality, Gulf lubricants and fuels work as a team to help contractors do a speedier, more profitable job. Gulf lubricants provide an extra margin of protection to equipment under all types of operating conditions—and Gulf fuels insure maximum engine power and efficiency.

GULF

Gulf Oil Corporation • Gulf Refining Company *Division Sales Offices:* **Boston • New York • Philadelphia • Pittsburgh Atlanta • New Orleans • Houston • Louisville • Toledo**

get around
to more profits

with P&H *Truck Cranes*

Faster Traveling • Faster Working
Greater Lifting Ability

Think of those *extra* jobs you can handle with a P&H Truck Crane . . . and the *extra* profits it makes possible.

The P&H Truck Crane, wholly built by P&H, truck and all, can handle a lot more on the hook . . . and with other front end equipment has more digging power at the tooth point.

You have dual power . . . an engine built for travel and a second engine for sustained hard work.

Ask any P&H Truck Crane owner and you'll understand why it is his biggest money maker. Get the full story. Write for literature today!

P&H Added Values

- Hydraulic control—a new peak in operating ease and safety.
- Greater stability—with exclusive torsion bar-mounted front axle and lower center of gravity.
- Independent planetary boom hoist — raises or lowers crane boom smoothly and safely, with or without load.
- Planetary load lowering — permits "inching" of loads accurately.
- All-welded construction — greater strength.

Size for size no P&H Truck Crane has ever been outlifted

P&H REMOTE CONTROL with this unit you can control all functions (even the horn!) by electric push-buttons — from the operator's position inside the crane cab.

P&H **TRUCK CRANES**
4494 West National Avenue
Milwaukee 14, Wisconsin
HARNISCHFEGER CORPORATION

There's a Macwhyte Rope that's the right rope for your equipment

All job-proved—a thousand and one wire ropes to choose from

For easy handling and longer service use PREformed Whyte Strand—it's internally lubricated.

Ask a Macwhyte representative to recommend the rope best suited for your equipment.

Macwhyte Wire Rope

MACWHYTE COMPANY

2941 Fourteenth Avenue, Kenosha, Wisconsin

Manufacturers of Internally Lubricated Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope.

Catalog on request

Our distributors and mill depots throughout the U. S. A. and other countries carry stocks for immediate delivery.

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Los Angeles

959

MULTIFOOTE *and*

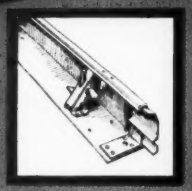
Everything you need for HIGH SPEED LOW COST PAVING

BLAW-KNOX Precision Subgrader

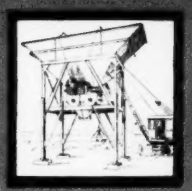
The only machine that will produce a perfect grade, true to crown and cross-section through the hardest material. The Blaw-Knox Precision Subgrader is the answer to all these problems:— Accurate control of slab thickness; smooth, uniform grade; reduced overrun of concrete; a minimum of handwork and adjustment; high capacity to keep ahead of pavers; lower cost of the most expensive type of excavation.

BLAW-KNOX Finishing Machine following a BLAW-KNOX Spreader

These two units make a combination that will give you lowest-cost, minimum of manual operation and highest quality of concrete paving construction for roads and airports, regardless of the type of mix. This modern paving combination will handle the output of two dual-drum pavers to give you record-smashing production.



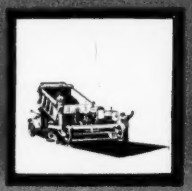
Paving Forms for Roads and Airports



Aggregate Batching Plants

Steel Street Forms

Bulk Cement Plants



Adnun Black Top Paver

Clamshell Buckets

THE FOOTE CO., INC.
Subsidiary of Blaw-Knox Co.
NUNDA, NEW YORK

Representatives in Principal Cities
Export Department: 342 Madison Ave., New York
Cable Address: Blawknox, Pittsburgh

BLAW-KNOX!

How would you do this job? Here is the MultiFoote High Lift Boom. Look how clean the job is and run over in your mind the equipment this paver is replacing by pouring direct to forms. The High Lift Boom really cuts your concrete handling costs.

NOW you solve your concrete problems all the way from rough subgrade to finished slab with one complete line of paving equipment. One manufacturer—one responsibility—Blaw-Knox gives it to you in one package.

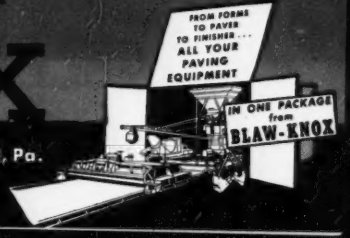
Take the Big MultiFoote DuoMix 34-E. There's a powerhouse of a double drum paver that you can count on to keep ahead of the rest of the high-speed Blaw-Knox line.

Its high operating platform permits full vision without the operator having to do a dance to see both ends and the middle. The Rotary Transfer and Rotary Discharge mean greater speed in the place where speed can be increased. The Multi-Feed Bucket delivers a shovelful or a barrowful. These and other MultiFoote advantages all mean higher speed, better control, easier upkeep and in the end—profit.

There are more MultiFoote Pavers in service than any other make. There must be a reason!

Specify MultiFoote and Blaw-Knox Paving Equipment.

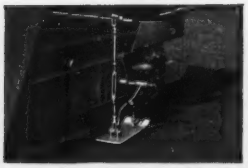
BLAW-KNOX



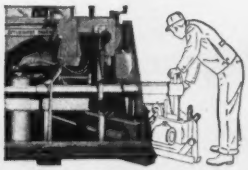
BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.

New York • Chicago • Philadelphia • Birmingham • Washington

the Paver of the future - Jaeger's BP-5



1. AUTOMATIC MATCHING of any adjacent course, curb, gutter or other grade line.



2. TWIRL A WHEEL TO CHANGE WIDTH: Lays any width 5'8" to 12'6", without adding parts.

3. SMOOTHEST RIDING SURFACES: 12' longitudinal floating runners equalize screed level.

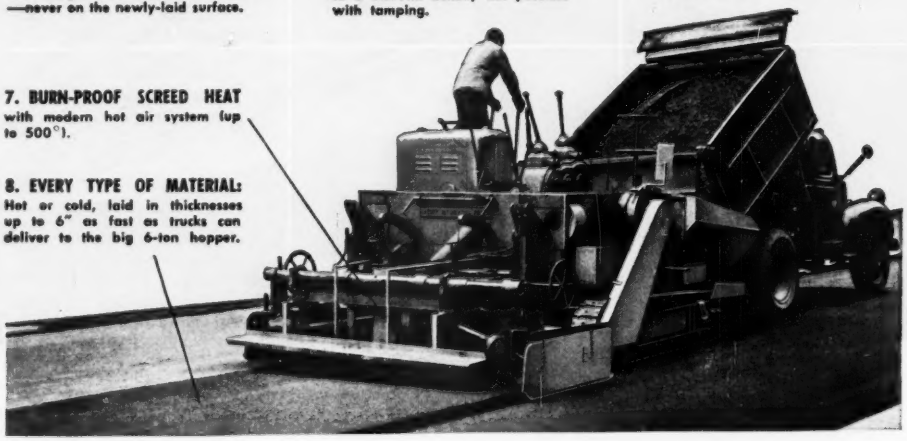
4. NO PREMATURE SEALING: Weight and traction are on the hard subgrade or completed course —never on the newly-laid surface.

5. MORE UNIFORM MAT: Fast-oscillating, bevel-toothed screeds, tiltable as needed, work material to a uniform density not possible with tamping.

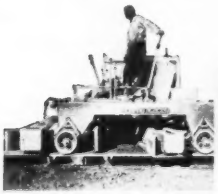
6. LAYS FLUSH TO CURBS and blends perfect-sealing joints between lanes.

7. BURN-PROOF SCREED HEAT with modern hot air system (up to 500°).

8. EVERY TYPE OF MATERIAL: Hot or cold, laid in thicknesses up to 6" as fast as trucks can deliver to the big 6-ton hopper.



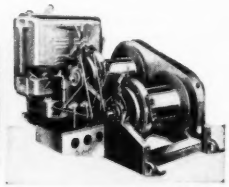
To the basically correct principles of paver design long-proved in earlier model Jaeger pavers, the Model BP-5 adds many important improvements in automatic precision and adaptability to the varied materials and conditions encountered in road, street and airport work. For complete information, see your Jaeger distributor or send for Catalog BP-9, describing numerous advantages of interest to contractors and highway engineers. Early deliveries will be limited to orders already on hand.



Diagonal Screed Finishers

Remixing, Compacting Spreaders

Mobile Truck Pavers



2 Speed, All-Steel Hydro-Hoists

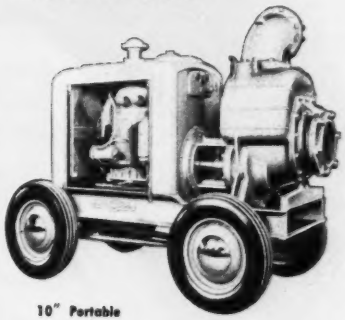
JAEGER "Sure Prime" for all pumping jobs

No other pump is built to handle water like the Jaeger "Sure Prime". Two separate, simultaneous priming actions prime it faster and more surely. Extra power in its engine, an ever-tight seal, and water passages 6 times larger than the intake insure the vacuum, capacity and pressure to pump big volume, against higher heads, move water at the lowest known cost per gallon to drain or supply your job.

Overall enclosures, exclusive with Jaeger, insure a dry, quick-starting, smooth running engine in all weather. Close-grained shell castings *armored against wear*, long-life Lubri-Seal always accessible for inspection, adjustable hardened impellers and replaceable liner plates mean thousands of extra hours of service for your money.

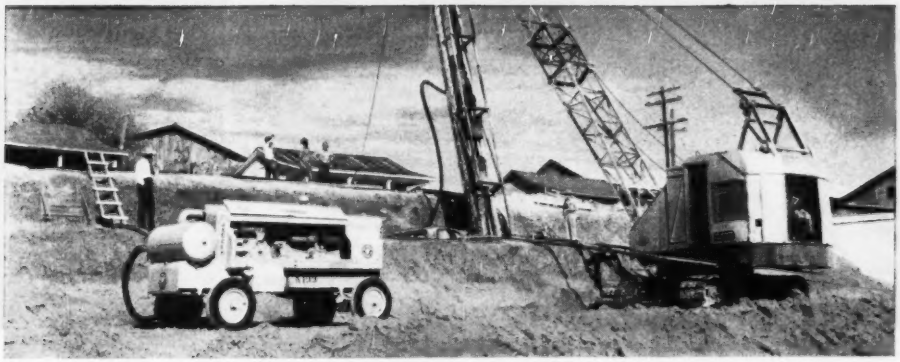
1½" Bantam

1½" to 10" sizes — capacities 3000 to 240,000 gph for dewatering service. Also pressure pumps including Super-Jet pumps for up to 275 lbs. pressure.



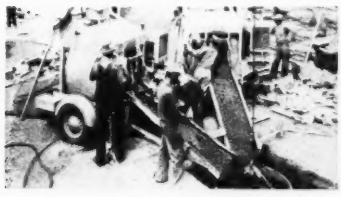
10" Portable

"Air Plus" pressure does 4 days' work in 3



Jaeger "new standard" compressors, delivering 15% to 20% more air than old standard ratings set in 1932, operate today's air tools at full pressure (90 lbs. instead of 70 lbs. at the tool), develop their full hitting power and drilling speed, actually do 30% to 40% more work per day.

This 15,000 lb. pile hammer, for example, requires 565 cfm of air at 100 lbs. for top efficiency and gets it from a Jaeger Model 600. Two big wagon drills will drill 30% to 40% more footage with this Model 600 than with any 500 ft. compressor. Other sizes, 75 ft. for one heavy paving breaker, 125 ft. for two breakers, 185 ft. for three, 250 and 365 ft. for larger tools, offer you comparable advantages.



Concrete, Bituminous Mixers

JAEGER

engineered equipment

Sold, Rented, Serviced in 130 Cities of U. S. and Canada

THE JAEGER MACHINE COMPANY

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NO MATTER *HOW* YOU FIGURE

YOUR BEST BUY IS . . .

CRAWLER TRACTORS
POWER UNITS
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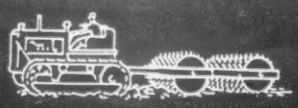
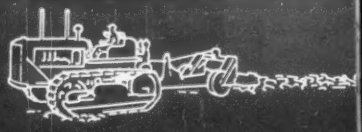
INTERNATIONAL



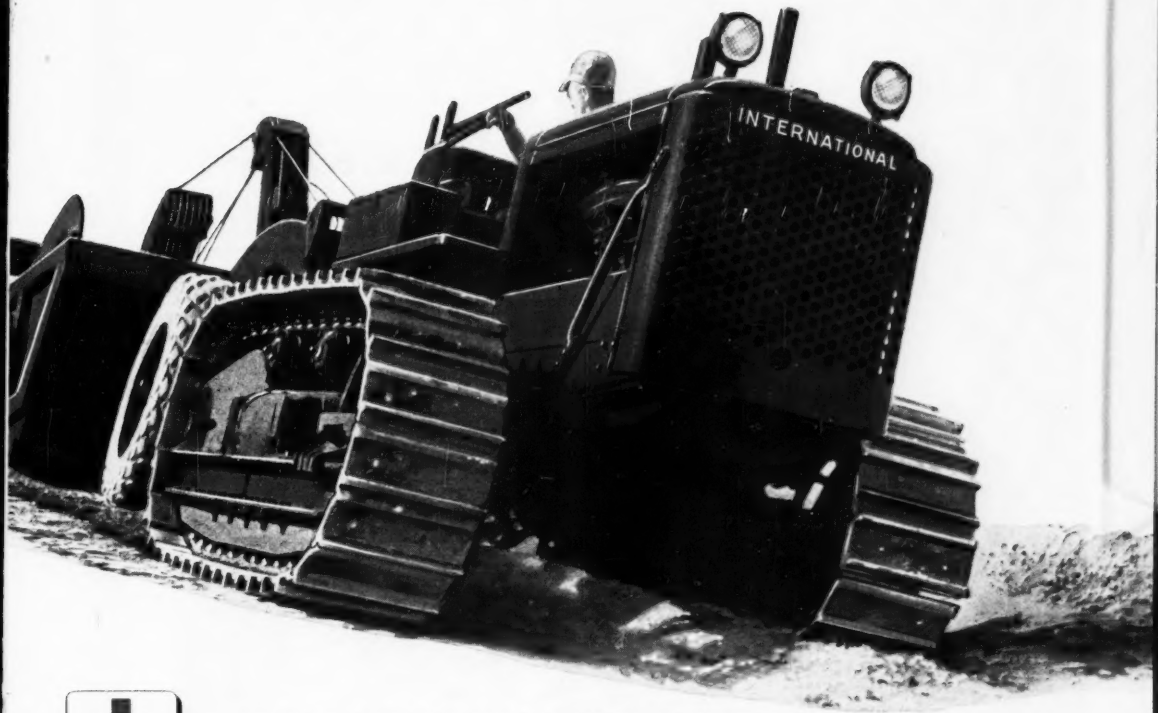


WHEN YOUR POWER IS INTERNATIONAL

Base your bidding on big pay yardage. Fit International Tractors and matched earthmoving equipment into your planning and reduce the downtime on your jobs. Rugged Internationals are built to carry on, hour after hour, day after day at minimum cost for fuel, lubricants and maintenance. And because they are backed up by a nation-wide, localized service organization, you have assurance of long-term satisfaction from Internationals.

Before you figure your bids, check your power and equipment needs with your International Industrial Power Distributor. He sells and services the full line of International tractors and International-powered earthmoving equipment. NO MATTER HOW YOU FIGURE — here is the power and equipment that will dig in and move profit-making yardages.

INTERNATIONAL HARVESTER COMPANY, Chicago



INTERNATIONAL HARVESTER

Hear James Melton and "Harvest of Stars" every Sunday, NBC. See your local newspaper for time and station.

Industrial Power

DAY in and day out, more and more yards are moved on Goodyear Earth Mover All-Weather tires. Experienced equipment operators know that this great tire is *right* for rolling yardage — right on schedule at rock-bottom cost!

Designed to carry maximum loads over all kinds of terrain, the large diamond pattern of the Earth Mover All-Weather distributes the load evenly to the carcass. The rounded diamonds reduce cutting and snagging, and the flat wide tread gives maximum flotation in soft going and even wear on firm surface roads — the nearest to an all-purpose tire that can be built.

That's why Earth Mover All-Weather tires — like *all* Goodyear work tires — are first choice with users everywhere. They stay *first* choice year after year because they keep on delivering low-cost, long-life performance.

This tire moves the earth on time!

A RIGHT TIRE FOR EACH JOB!

BUY and SPECIFY GOODYEAR — it pays!

EARTH MOVER SURE-GRIP for maximum traction on drive wheels

HARD ROCK LUG for super-stamina in all rock work

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday — ABC Network

GOODYEAR

All-Weather, Sure-Grip—T.M.'s The Goodyear Tire & Rubber Company

MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND

Construction Methods

Volume 31 APRIL, 1949 Number 4

CUTS AND FILLS

THE RECENT annual convention of the Associated General Contractors of America in New York was one of the best we ever attended, and we've been following these meetings for 21 years. It seems to us that contractors are paying far more attention to the business of construction, and to national economics than ever before. Several speakers on business and economic subjects were enthusiastically received.

AMONG THE GREATEST achievements of A.G.C. is the establishment of joint cooperative committees between the contractors and architects, state highway officials, airport engineers, U. S. Corps of Engineers, U. S. Bureau of Reclamation, and—after Admiral Jack Manning's curt remark at the convention: "I'm sore as hell about being left out,"—with the Bureau of Yards and Docks. Machinery set up by the committees irons out many a potential construction headache, streamlines specifications, eases up senseless too-rigid inspection, and solves many little problems before they become big.

CONTRACTORS were told at the A.G.C. meeting to cut costs or they would price construction out of the market. This means greater efficiency and better management on the job. Banker Guy C. Kidoo told them: "You should not simply accept high costs as inevitable and pass them on to owners and public authorities."

OBVIOUSLY there is no place today for the contractor who complains about work going too cheap. Construction costs are slowly approaching the realistic stage, and contractors might as well figure out ways and means to meet them if they want to stay in business.

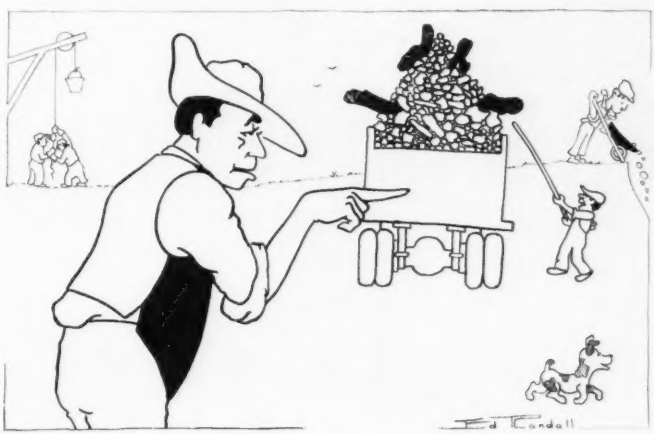
CONSTRUCTION COST index figures are dropping a few points every month, but bids are considerably below those of a few months ago. The difference is a big drop in contingencies and the intangible costs of construction not reflected by cost indexes.

FEW REDUCTIONS have been noted so far in equipment prices. Many contractors believe that manufacturers should get their production costs in line with current construction costs. Watch for some such results when equipment sales volume begins to slacken.

HOW MUCH COST information is the owner entitled to from the contractor? This question was discussed at length by both contractors and government agency representatives at th A.G.C. Heavy Division meeting. Most contractors feel that their costs are their own private affair. Besides, they point out, job costs furnished the owner may be subject to misinterpretation, for they do not include *all* overhead items, such as home office expenses, certain equipment depreciation and other contingencies. Therefore a job cost analysis probably shows a percentage of profit far above actual profit when all costs are included—a situation too freely capitalized upon by day-labor advocates. After all, since contract prices are actual costs to the owner, it would seem they would be sufficient for the owner's needs.

ON THE COVER—Sweetest song in the world to many a seasoned construction man is the swish-boom of a big pile hammer pounding away at a stubborn pile. You can almost hear the "swish" in looking at the cover shot, and you unconsciously wait for the "boom" a few seconds later. This rig is working on the remarkable pile job at New York's Staten Island ferry terminal. The job is described in our lead article this month.

DON'T OVERLOOK the CONSTRUCTION METHODS monthly prize picture contest. See details elsewhere in this issue and gather in some extra bucks with your shutterbugging.



Spike sez: Knock those chunks off before they clunk somebody on the head. Trimming every load is a safety must on my jobs. Yep, no use beaning the innocent bystanders.

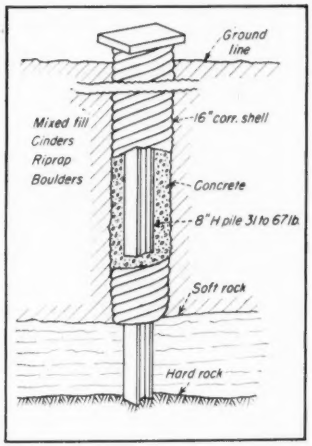
SPECIALLY RIGGED driver with all-welded 90-ft. tower leads drives new type steel-and-concrete pile for Staten Island, N. Y., ferry house.

Super Rig Drives Super Piles

CONVENTIONAL PILES and driving methods were considered inadequate to meet tough foundation conditions at the new $25,000,000 Staten Island Ferry Terminal being built by the New York City Department of Marine and Aviation to replace facilities burned out three years ago. A new type double-driven combination steel H and concrete pile, driven by a beautiful all-welded, specially-equipped 90-ft. driver proved to be the answer to a difficult problem.

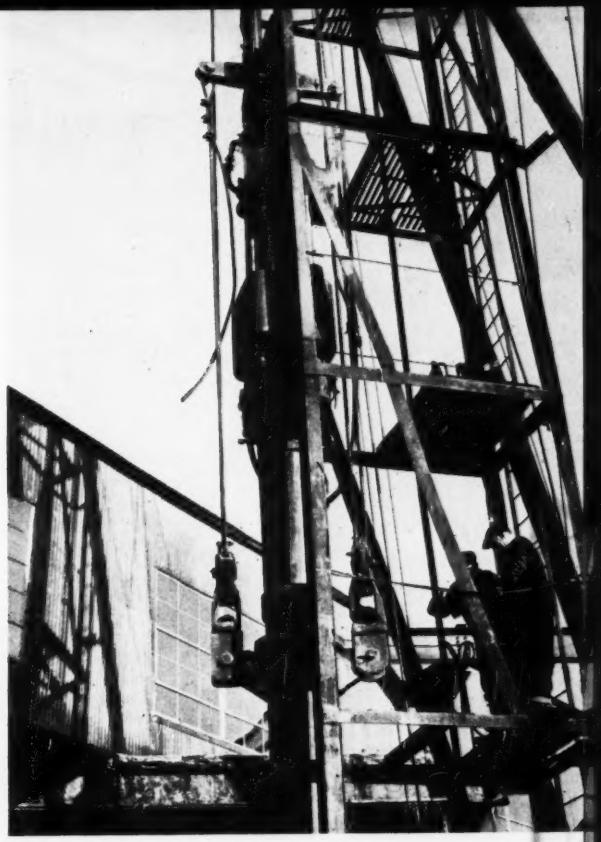
Ground at the site is a mixed fill of cinders, riprap and boulders from 10 to 50 ft. deep, having little bearing value. This mixture overlies a stratum of soft rock from 4 in. to 4 ft. thick. Beneath this formation is solid rock. The combination steel-concrete pile was not adopted without due consideration of other types of foundations. Open-end steel pipe piles would have probably served—but there was no pipe available. Caissons to rock, either excavated or drilled in, would also have been suitable, but loads were not sufficiently concentrated to warrant their expense. Yet many of the loads were too great for conventional precast or cast-in-place concrete piles.

The new type pile was worked out jointly by Emil H. Praeger, of Madigan-Hyland, consulting engineers for the Department of Marine and Aviation, and J. H.



NEW PILE combines advantages of cast-in-place concrete and H-beam types. Corrugated shell is set within outer shell (not shown) driven along with steel core. Outer shell is pulled after steel section, encased in concrete, has been driven to solid rock.

BIG DRIVER, mounted on steel skids, carries 2-drum engine, 75-hp. boiler and 90-ft. tower leads.



STEEL CORE is pulled, after it and outer casing are driven to rock. Core is lifted by hammer. Note part of rigging for pulling outer shell, not in use here, which reacts part of pull against hammer and steel H-section for exerting 150-ton pull for removing outer casing.

Thornley, president of Western Foundation Corp., foundation subcontractors for Corbetta Construction Co., on the project.

As shown in an accompanying sketch, a concrete pile, cast-in-place in a corrugated shell, is physically combined with a steel H-pile separately driven into rock. The New York City Building Code allows this combination—a load of as much as 1,000 psi. on the net section of the concrete and 12,000 psi. on the steel H, but nothing on the shell encasing the concrete. Under the New York Code, steel normally is allowed only 9,000 psi. but complete protection and specified hard driving permit use of the higher value. A top limit of 100 tons load per pile is permitted with the provision that up to 200 tons may be used if proved safe by load tests.

The driving procedure worked out with the pile design is as follows:

First a 19-in. O.D. pipe of 1-in. wall and special hardened cutting edges is driven along with a removable close-fitting steel core or mandrel, driven into a batch of dry concrete at the start to provide a mud seal as it is driven to rock level. A No. 0 Vulcan hammer (7,500-lb. ram falling 39 in.) drove this assembly to practical refusal at 10 to 15 blows per in. into the soft rock. Had the pile been formed at this point, bearing value according to the *Engineering News* formula would have been well over 150 tons. Yet, because of the known low supporting value of the soft

IN CHARGE of job for Western Foundation Corp. is WILMOT (MONTY) MILBURY, left, shown here with the firm's chief engineer, HAL HUNT.

LUFF LINE through 5-part sheaves adds lots of power to pulling arrangement.

rock and uncertain reliability of the pile formula under the conditions, the steel core was considered a necessary safety factor.

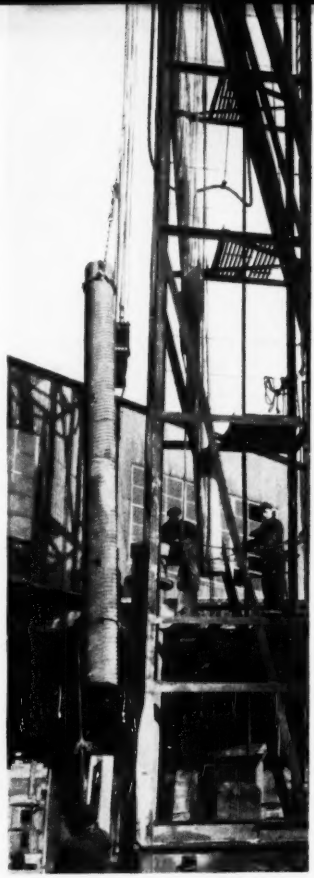
Next, the core or mandrel is removed, leaving the outer casing temporarily in place. Then a 16-in. corrugated metal shell, open at both ends and cut to length, is lowered in the casing. An 8-in. H-section, varying from 31 to 67 lb. per ft., is dropped down the inner casing. Spacers welded to the section keep it roughly centered. Concrete, delivered by Scoopmobile from a 14S mixer, is placed inside the shell, encasing the steel pile.

H-Pile Driven Into Rock

Then the steel section is driven, independent of the casing, to refusal at 15 to 20 blows per in. penetration with the No. 0 hammer. This drives the pile well through the soft rock and into the hard rock, from 1 in. to several feet below the bottom of the outer casing.

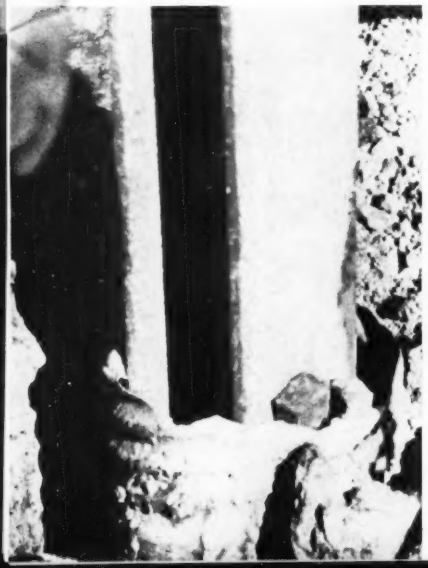
Next, the outer casing is pulled, leaving the composite pile undisturbed within the corrugated shell The steel section is plumbed, and cut off to grade with a gas torch. A column foot plate is carefully fitted to bear on both steel and concrete sections.

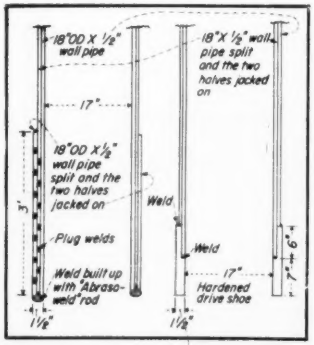
Analysis of the design shows the pile has a double bearing value. Before any settlement can occur, the soft and medium rock under the concrete must fail and the steel section must cut into the



CORRUGATED INNER SHELL, handled by niggerhead line, is dropped into outer casing after driving core is pulled.

H-SECTION is plumbed within corrugated casing by blocking prior to pouring final concrete to top.





TWO METHODS that proved successful for reinforcing cutting edges of outer casing. Hard surfacing, applied by welding, holds up well in cutting groove, but chipped off from flat edge in early trials.

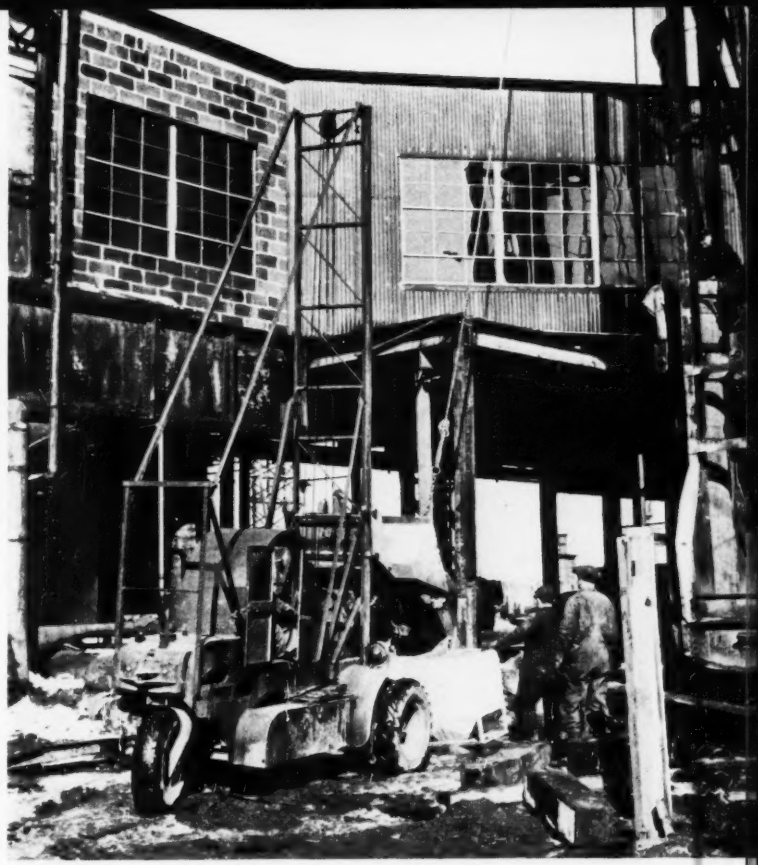
GAS TORCH cuts H-Section to grade.

hard rock. Working loads, in many cases, are more than 100 tons, so bearing tests have been made to prove the theoretical load calculations. Fourteen tests have been made on loads up to 230 tons per pile, all satisfactory. Maximum settlement, after rebound, was ½ in. under a 216-ton load.

Western's regular method of installing cast-in-place piles requires driving an outside casing (about 14-in. O.D.) with its lower end closed, placing a shell inside to contain the concrete and then withdrawing the drive-casing. The two all-welded skid drivers on the work are very heavily built to meet the stress of such pulling.

The driver is mounted on a 38-ft. bedframe of two 24-in. beams. The beams are narrow at the front to support the 36-in. clear width, 90-ft. high box-type leads. The beams spread at the rear for greater stability and here a double-drum hoist and 60-hp. vertical boiler are mounted. The rig is moved by skidding, iron to iron, on five 12-in. beams about 40 ft. long.

Western's regular rigs are planned to develop a 75-ton pull. But for the 19-in. O.D. casing driven quite hard, it was expected, and field operations showed, that the 75-ton pull would not be sufficient to extract the casing after this severe driving. For this work the drivers are rigged to pull, using 22 parts of ½-in. cable reeved in two sets of five-sheave blocks that operate through twin, two-part luff tackles. With both lines attached to one drum of the hoist for equal speed, a theoretical pull of 150 tons can be developed. This was ample to extract the forming apparatus.



CONCRETE for filling corrugated casing and encasing H-section is delivered to driver by Scoopmobile. Concrete bucket is handled by niggerhead line.

Rigged for 150-Ton Pull

For forming a compressed or uncased type of pile, Western has long used a rig that forces the concrete down in direct proportion to the speed with which the outside casing is removed. This rigging was used here to put part of the 150-ton pull required for pulling the casing on the H-beam core of the pile and thus directly to the hard rock. This eliminated tendency of the driver mats to sink into the rather poor surface of the soil while pulling.

Still another early problem was crumpling of the cutting edge of the outer casing. Ordinary carbon steel shoes were not satisfactory. The problem was eventually licked by special bottom sections, as shown in the accompanying sketch. One type is built up with hard-face welding at the bottom. Hard surfacing chipped off at first from flat bottom cutting edges, but now it is deposited in a trough or cutting groove, and stands up remarkably well.

The job of driving 925 composite and 300 wooden piles is nearing completion.

CASH PRIZES FOR CONSTRUCTION PHOTOS

CASH IN on your pictures of interesting and outstanding construction operations by entering the continuing monthly *Construction Methods* photo contest. Full details and rules were announced in the March issue, but they are simple.

Just send in good pictures in glossy prints 3¼x4¼ in. or larger (or accompanied by negatives) of spectacular construction scenes, new construction ideas, new or unusual applications of equipment and tools, good or bad safety measures —in fact, anything of interest pertaining to actual construction operations.

Each month three cash prizes of $25, $15 and $10 will be paid for photographs judged best by the editors. Other pictures published will be paid for at standard rates of $5 each.

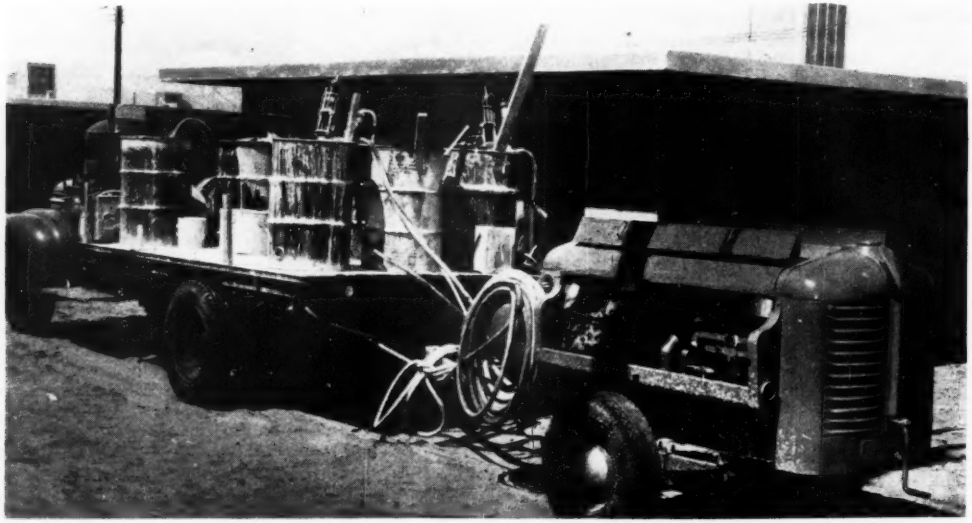
Grease up the old camera and send those good shots to: Picture Contest Editor, *Construction Methods*, 330 W. 42 St., New York 18, N. Y.

Navy Paints Town...With Compressed Air

Operation Spray Gun . . .
Spraying finish coating on concrete wall in kitchen of prefabricated house at Naval Ordnance Test Station in California. Paint hose to gun varies from ½ in. to ¾ in., depending upon viscosity and particle size of paint.

AN ARRAY of compressors, spray guns and pumps replaced the customary brushes and buckets in painting the interior of 380 prefabricated pumice concrete houses at the new Naval Ordnance Test Station on the Mojave Desert, Calif. Applicable to almost any surface, the new "Sprazon" concrete paint, a product of the Universal Sta-Dri Corporation of San Francisco, was applied to unfurred concrete walls, sheetrock, metal ducts, and even woodwork on this project. The ingredients for the paint, including cement, lime, pigment, asbestos fiber and a vehicle which acts as a binder, were mixed on the job by the manufacturer. While it will adhere to almost any surface when correctly prepared, if the paint is adulterated or improperly mixed, it flakes off.

A heavy-duty reciprocating pump, operated at 30 psi. supplied Sprazon to the spray gun through a ½- or ¾-in. hose, depending upon the viscosity and particle size of the paint. Air hoses for both the pump and the gun are ½ in. Paint texture is regulated by the air pressure at the gun which usually varies from 40 to 50 psi.



Lungs of the Outfit . . .
Compressor furnishes air for heavy-duty reciprocating pumps in paint drums at 30 psi. through ½-in. rubber hose. Spray gun gets air at 40 to 50 psi. through ½-in. hose

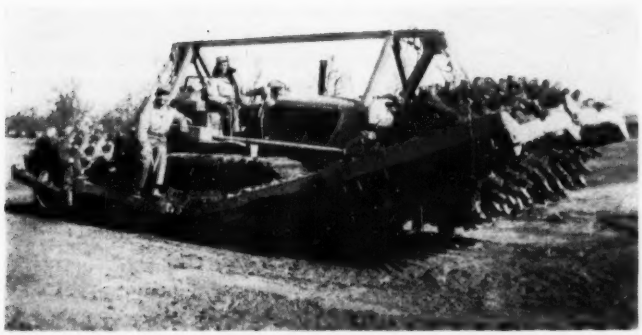
Spick-and-Span Village . . .
At Naval Ordnance Test Station on Mojave Desert, Calif., interiors of 380 prefab pumice concrete houses were painted by compressed air and new Sprazon concrete paint.

The Navy apparently wants this town to stay painted. All surfaces underwent thorough scourings to remove dust, dirt, oil, grease, and even loose cement before spraying operations began. Wood surfaces were treated with a prime coat to comply with federal specifications. Under constant check, the paint was maintained at the proper consistency to assure workability in pumping, spraying, and texturing. Great care was taken to spray paint only to uniform staple finishes. Applied in uniform coatings not less than 1/16 in. thick, paint was quickly trowelled before drying, to free surface of pits, scratches, cracks and other blemishes. Ammonia in the mixture insures quick drying. Overly absorptive surfaces were sprayed with water before application of Sprazon.

In lieu of plaster this plastic base textured coating was applied for almost any thickness of finish coat over a wall surface. For straight wall painting ¼-in. thickness costs 15c. per sq.ft. A single coat of Sprazon costs only 7c. per sq.ft. Since dried spots of this paint are extremely hard to remove from windows, cupboards or floors, the most expensive part of the operation, both in cost and in time, is in masking areas not to be painted.

Data and photos for this article were obtained by the Compressed Air and Gas Institute through the courtesy of the U. S. Naval Ordnance Test Station.

Tractor Mounts Rollers Fore and Aft



COMPACTION OF SMALL AREAS is made possible by use of sheepsfoot rollers mounted in front of and behind this tractor. Either or both rollers can be lifted by power from tractor's winch.

A TRACTOR with sheepsfoot rollers mounted both fore and aft was foremost of several pieces of special equipment used by a Redwood City, Calif., contractor to grade the site for a new San Jose, Calif., high school. The tractor thus equipped is usable on many sorts of compaction work, but is particularly adapted to working in confined spaces. It was well suited to compact basement slab subgrades for the school buildings.

Mounting two Le Tourneau rollers, the Caterpillar D7 tractor is so rigged that either or both of the rollers can be lifted up out of the way. Power for the lifting comes from the winch regularly mounted on the tractor.

The sites for the San Jose school buildings were excavated several feet below ground level and partially filled with select material

(Continued on page 41)

How to get more miles between overhauls

Stanolube HD Motor Oil

Tough operating conditions need not limit the mileage you can get between engine overhauls. Evidence of this is shown in these experiences of three widely different types of fleets:

BUS FLEET UNITS GO 100,000 MILES

The Central Illinois Electric and Gas Company, Rockford, Illinois, started five new Twin Coach buses on Stanolube HD Motor Oil in 1946. Under punishing conditions of city operation, each unit has traveled approximately 100,000 miles without major overhaul.

TRUCK GOES 200,000 MILES WITHOUT MAJOR REPAIRS

The Milo Kunau truck fleet, Miles, Iowa, makes tough farm-to-market hauls. One of the trucks went 200,000 miles without requiring major repairs. The engine, torn down for overhaul, was found to be in excellent condition. There were no excessive deposits. Rings were clean and free. This is typical of the low maintenance Stanolube HD has brought to Mr. Kunau's entire fleet.

CONSTRUCTION FLEET GOES FOR TWO YEARS WITHOUT ENGINE TROUBLE

Adverse road conditions and heavy loads of ready-mixed concrete make rough going for the 43 trucks of the Stewart Sand & Material Co., Kansas City, Missouri. For two years Stanolube HD has, nevertheless, prevented engine troubles resulting from lubrication or deposit difficulties.

Here is evidence that Stanolube HD will increase mileage between overhauls for your fleet, even under the most punishing conditions of service. A trial will prove it.

If you are located in the Midwest, write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, to secure the services of the Standard Oil Automotive Engineer nearest you.

STANDARD OIL COMPANY (INDIANA) STANDARD

(Continued from page 39)

that was compacted by the tractor. By using the rollers at both ends, the tractor efficiently compacted the area and did not have to turn around or be removed to get at material in the corners.

Other work involved in the school site was leveling a football field, building roads, etc. An 18-ft.-wide scraper, especially constructed by the Be-Ge Manufacturing Co., Gilroy, Calif., and hauled by an International TD-14 tractor, was effective in the grading work.

Another piece of equipment pulled by the TD-14 was a combination ripper and carrying scraper. This 10-ft. wide ripper-pan had a series of teeth so mounted that it could be used for scarifying. When used for earthmoving, the teeth were hoisted out of the way by a hydraulic apparatus and the 1½- to 2-yd. capacity pan went into operation.

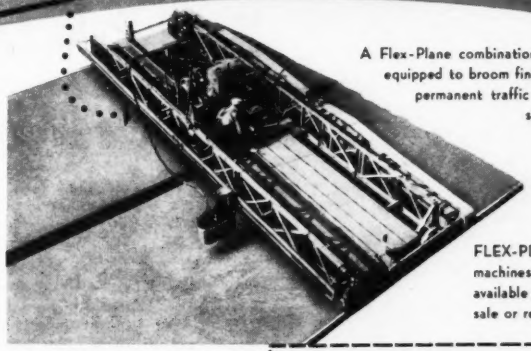
Grading contractor on this work was J. O. Archibald, Redwood City, Calif., who developed the equipment involved. The ripper-pan was made in the Archibald shops.

Hillman and Nowell, Los Angeles, are structural engineers on the San Jose school job.

LEVELING IS ACCOMPLISHED by this specially built 18-ft.-wide scraper. Extra wide steel tires prevent sinking into soft ground.

DOUBLING AS SCARIFIER and scraper, this 1½-yd. pan also is useful on small grading work. Teeth can be lifted out of the way for dirt moving.

MECHANIZE BEHIND THE FINISHER



A Flex-Plane combination machine equipped to broom finish, install permanent traffic lines and spray cure.

FLEX-PLANE machines are available for sale or rental.

• With Flex-Plane equipment you can mechanize the entire paving job . . . the modern high speed Flex-Plane finisher needn't outdistance the miscellaneous "end" jobs. The Flex-Plane mechanical tie-bar and dowel spotter, the vibratory joint machine and the combination spray machine will crowd the fastest paver. The completely automatic combination machine can broom, belt or drag burlap, install permanent traffic lines and spray cure. Don't let outmoded methods retard jobs nor run away with costs. For full information, return the coupon from this ad.

COMBINATION MACHINE:
• BROOMS, BELTS OR DRAGS BURLAP
• INSTALLS PERMANENT TRAFFIC LINES
• SPRAY CURES

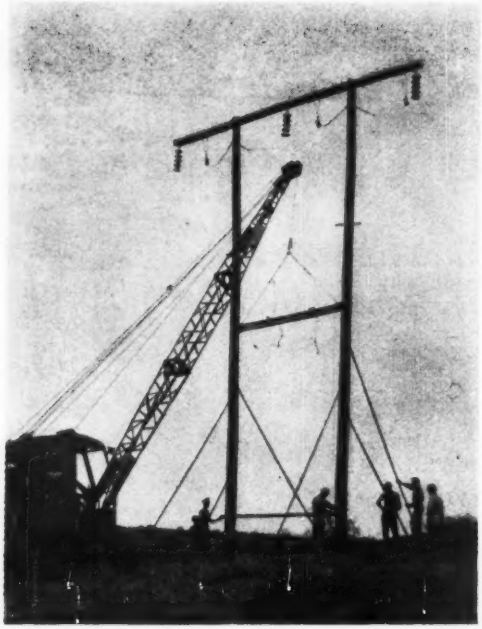
FLEX-PLANE
WARREN OHIO
(FLEXIBLE ROAD JOINT MACHINE CO.)

Send me full information on:

_____ Flex-Plane spray and combination machines.
_____ Flex-Plane vibratory joint machine.
_____ Flex-Plane mechanical dowel and tie bar spotter.
_____ Flex-Plane finishing machine.

*Name*_____
*Company*_____
*Address*_____
_____

Mail to FLEX-PLANE, Warren, Ohio



COMPLETELY FRAMED pole assemblies are set in prebored holes by crane on West Texas transmission line. Note wires held temporarily by dollies slung from crossarms.

AS SOON as pole assemblies are set, lineman is hoisted to crossarm level in boom-and-basket arrangement on truck. Lineman transfers wires from dollies to insulators with help of laborer on ground to adjust wires to correct tension and sag. Second basket rig is mounted on another crane.

AFTER COMPLETING setting of pole assembly, erecting crane and truck-mounted basket rig move to next station.

Wood Pole Line Framed on Ground Erected Complete With Cranes

"IT MADE GOOD SENSE to try the experiment," says J. L. Allhands in describing the erection of a 29-mile H-frame wood pole transmission line in West Texas by framing the assemblies complete on the ground, including crossarms, insulators and wires, and setting them in place with cranes. The job was a 66KV line, 2/0 ACSR, between Turkey and Matador, Tex., built for the West Texas Utilities Co. by Allhands and Briley, Dallas contracting firm whose principal activity is heavy grading. Poles averaged 65 ft. high, and the crossarms were 29-ft. treated line poles.

"We were totally inexperienced in that type of construction," Allhands declared. "Linemen were scarce and hard to get, and the pole climbing and the installation of insulators that hung 2½ ft. below the crossarms seemed a stupendous undertaking." He gives credit for the idea of complete framing on the ground to his partner, J. J. Briley. Riley N. Jackson, superintendent on the job, helped work out the details.

The project was started with routine distribution of poles and hardware, followed by a power hole digger. Wires were strung out on the ground from reels on trucks, and through 9 mi. of sandy waste the trucks had to be helped by tractors. Then the poles were framed complete with insulators

BASKET RIG proves handy in highline work necessary on special pole assembly next to substation.

and ground wires, and the wires were fastened to the crossarms through aluminum dollies.

A Bucyrus-Erie crane with a 40-ft. live boom then set the framed pole assemblies into the prebored holes. Two highline baskets, or working platforms to hold two men each, built out of scrap angles and planks, were mounted on a Northwest crane and an International truck, the latter being fastened to a crane boom on the truck.

Linemen Transfer Wires

From these baskets, elevated to crossarm level, linemen transferred the wires from the dollies to the insulators. They were assisted by laborers on the ground in getting the correct sag and tension in the wires. Thus, the highline work was extremely simple. One lineman in each basket, assisted by one laborer, completed all of the wire work. Without the basket arrangement, eight linemen and eight "grunts" or laborer helpers, would have been required. The poles were framed and hardware was attached on the ground by laborers.

Certainly, it seems, the experiment was well worth trying.

A "PROFIT PACKAGE" FOR PIPE BENDER OWNERS

HERE'S WHAT YOU'VE BEEN WAITING FOR!

P-182 Converts Your Manually-Operated Hydraulic Systems to Power Operation

Here it is—a new and complete "profit package" for converting your hand-operated Blackhawk Pipe Bender to power operation. This practical conversion adds speed, power and ease to your pipe bender work. It slashes bending time, saves man and muscle power and creates big savings for you.

Handy P-182 is adaptable to any hydraulic system and any job. Its compact "service-proved" design incorporates control valve, motor, pump, and reservoir in *one* package—a "profit package" for you.

A Product of BLACKHAWK MFG. CO., Dept. P2349, Milwaukee 1, Wis.

You Get These Advantages

EASY TO USE—Simply remove your hand operated pump, connect the hose to the P-182 and you're set to plug it in and go to work anywhere.

SAVES TIME—Effortless to operate—P-182 eliminates slow-downs due to fatigue. It works at top speed all day and, consequently, turns out more work.

SAVES MONEY— P-182 pays for itself in manhours saved alone. On time and material jobs this saving means lower bids, more jobs.

IMPROVED WORK—Fingertip single lever control permits operator to focus attention on job—hands are free to check measurements, etc.

PORTABILITY— Equipped with handle — one man can easily carry P-182 right to job.

INCREASES PRODUCTION — Fast, versatile P-182 handles pipe bending or operates as many as 2 to 25 hydraulic rams simultaneously for other production or maintenance operations.

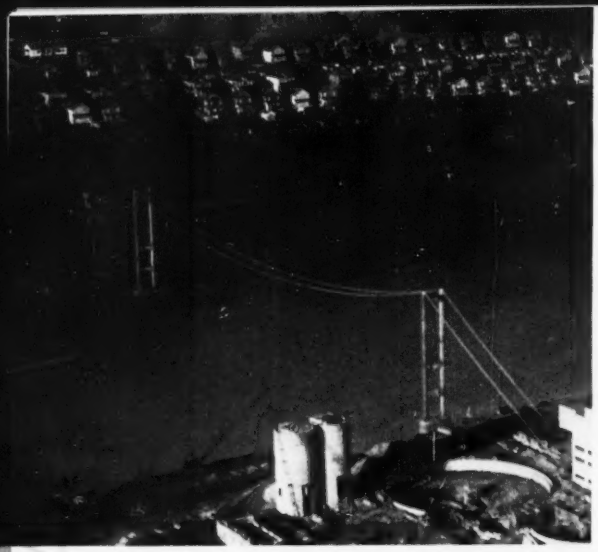
Ask your Industrial Supply Distributor for full information on the New P-182 or write for bulletin.

Be Sure You Get These "Extras"

Blackhawk Porta-Power Pipe Benders do MORE than bend pipe. Hydraulic ram is detachable for use with P-182 on production and maintenance operations such as pulling pulleys, lifting machinery, etc.

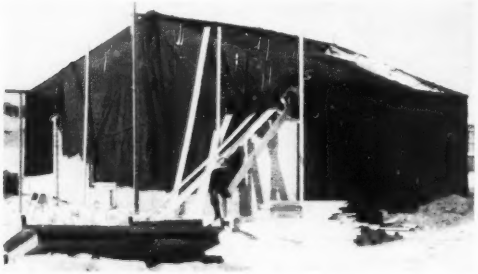
BLACKHAWK

JOB oddities



SUSPENSION BRIDGE TO CARRY COAL on conveyor belt is feature of $12,000,000 coal preparation plant being built by F. H. McGraw & Co., New York contractor, for Jones & Laughlin Steel Co. at East Fredericktown, Pa. Monongahela River crossing has 1,000-ft. suspension span. To prevent wet coal from freezing as it crosses bridge during severe winter weather, Quonset-type cover will extend entire length of structure, making it world's longest covered bridge.

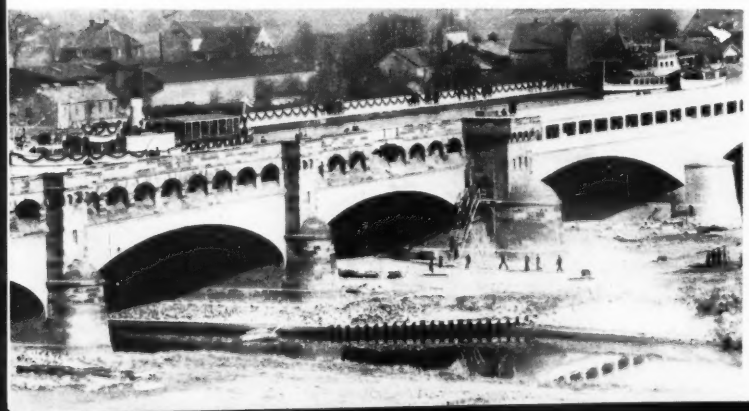
IN ODD FISHY ROLE this P.&H. ½-cu.yd. clamshell bucket, associated in minds of construction men with earth excavation or sand and gravel stock-piling at concrete-mixing plants, is here shown unloading herring from fishing boats in Iceland. Bucket was sold for this service by P.&H. Iceland dealer, G. Thorsteinsson & Johnson, Ltd.



AN UNDER-COVER OPERATION is here carried on as John F. Stimson and Paul Clayton foil rain and cold and speed continuous construction at Highland Heights, Ogden, Utah, by building 5-room brick house beneath big tarpaulin tent. Work proceeded without halt, irrespective of weather conditions.

WORLD'S LARGEST IMPACT STONE CRUSHER is claim of New Holland Machine Co., Mountville, Pa., for this double impeller unit weighing 54 tons and standing 14 ft. high. Will take stone up to 50-in. size and produce aggregate in two sizes—8- and 3½-in. Twin cast-steel impellers, each weighing 13,400 lb., and capable of speeds up to 785 rpm., catch stone in mid-air as it enters breaking chamber and sends it flying against 8-in. manganese steel breaker bars set around chamber.

CANAL CROSSES RIVER on Mittelland viaduct spanning Weser River near Minden, Germany. Destroyed during war, viaduct has been restored to link two canal systems and cut travel time between Ruhr and Hannover-Brunswick industrial area.—Wide World Photo



DURAPLASTIC fortifies concrete against effects of freezing and thawing

● Millions of square yards attest that concrete pavement made with Atlas Duraplastic air-entraining portland cement better withstands the effects of winter's claws and is highly resistant to the bite of de-icing salts. Here's why:

When Duraplastic is used, less mixing water is needed for a given slump, yet the mix is more plastic, and bleeding and segregation are minimized; the concrete is fortified against the effects of freezing-thawing weather and made highly resistant to the scaling action of de-icing salts.

Atlas Duraplastic provides the proper amount of entrained air interground with the cement for satisfactory field performance. It conforms with ASTM and Federal specifications and sells at the same price as regular cement. Write for further information to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Des Moines, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

CM-D-62

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—ABC Network*

RUD-O-MATIC
TAGLINE

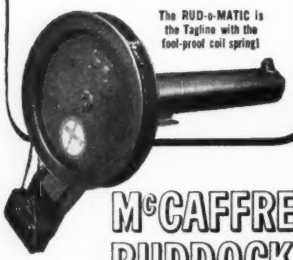
Provides positive, steady tension — holds buckets steady under all working conditions.

Spring tension holds buckets steady. No weights, pins, tracks, or carriages. Cable saving more than pays for RUD-o-MATIC. Compact—easily installed. Eight models to fit all bucket sizes.

RUD-o-MATIC Taglines are used as standard equipment by most crane manufacturers. Spring tension is powerful enough to hold a clam shell bucket steady. Operates with boom at any angle. Compact – it can be installed in less than thirty minutes. No pins, weights, tracks, or carriages to wear or be replaced. Taglines are complete with fairlead U bolt clamping plates, and cable attached. Immediate delivery – see your equipment dealer – or write –

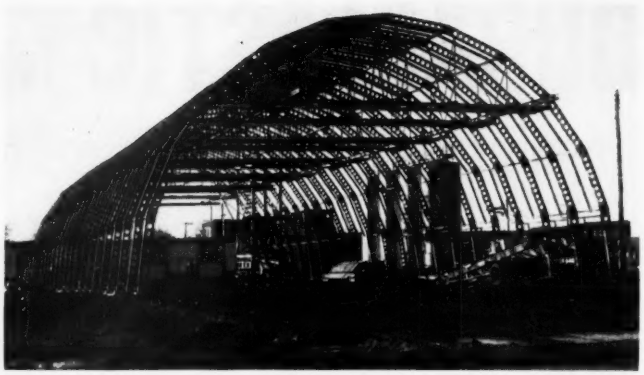
- *Dealers—selected territories in Midwest and Northwest are still open. Write for all details.*

RUD-o-MATIC combination Magnet Reel and Tagline . . . operates on spring tension principle with tagline attached to magnet to steady – and electric cable fastened to magnet connections with all slack needed to prevent cable from being pulled or jerked loose from connections. Exclusive with RUD-o-MATIC.



McCAFFREY RUDDOCK *Tagline* Corporation

2131 East 25th St., Los Angeles 11, Calif.

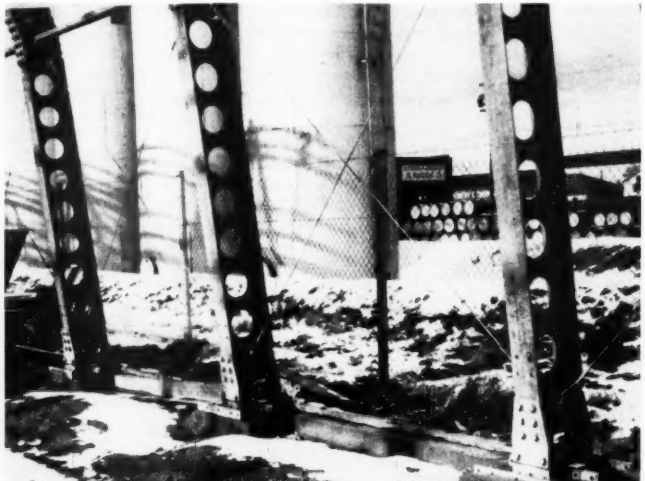


HERE are seven Navy surplus "nose hangars", now part of new 204x78-ft. Ellis Co. steel fabricating plant in Salt Lake City. Arch height is 39 ft., and structure is completely clear of floor obstructions.

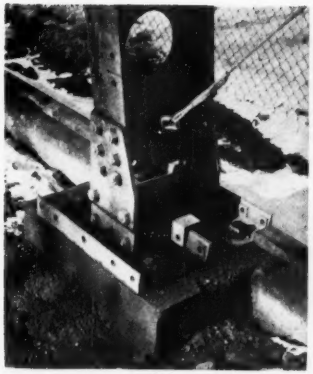
Old Hangars Make New Steel Plant

BY ERECTING seven prefabricated "nose hangars" end on end and making several minor design alterations, F. N. Ellis Co., steel fabricators, have built a handsome 204x78-ft. plant and warehouse in Salt Lake City, Utah. Composed of 22 arches at 9-ft. 8-in. centers, the building is completely clear of floor obstructions and has an arch height of 39 ft. Each arch is made up of twelve straight 10-ft. galvanized I-sections. Since the building houses a 4-ton overhead crane, all arches are anchored to concrete footings. Outside sheathing is of corrugated steel.

Ellis bought his plant, and considerably more, during a surplus sale at the Clearfield Navy Depot in



ARCHES on 9-ft. 8-in. centers are composed of twelve straight 10-ft. I-sections. Entire frame was delivered in package form. Erection is by owner.



ELLIS isn't taking any chances. Since building supports 8,000-lb. overhead crane, arches are anchored concrete footings. Crane operates at 26 ft.

Utah where he picked up 700 ft. of hangar structure in package form. Fabricated by International Stacy Corp., the 39-ft. high hangars were originally earmarked for naval use in the South Pacific. With the remainder of his hangar material, Ellis has erected two buildings in Colorado and two in Wyoming. The one pictured on page 46, for his own use, was completed late in December.

Night Lighting

LIGHT FOR NIGHT CONSTRUCTION at Cherry Creek Dam, near Denver, Colo., is supplied by these movable tall tower rigs equipped with Caterpillar diesel-electric power sets. Phelps-Wunderlich-James are contractors on project.

Since I got this MICHIGAN, I've been able to handle a lot of the jobs around the country that I had to pass up before. That shovel gets to the job as fast as my trucks, and under its own power. It'll roll through city traffic without any trouble—and I don't have to worry about highway limits. Best of all, it'll pull in and out of any place the trucks can go. Yessir, my MICHIGAN is always ready to go—saves plenty of time too!

I looked 'em all over before I decided on MICHIGAN—and the way it has performed since convinces me that MICHIGAN is 'tops' as a money-maker.

DID YOU KNOW
you can buy
a brand new
MICHIGAN
TRUCK CRANE
complete with chassis
for as little as $10,250
F.O.B. factory?

Write for Bulletin 100, "*On the Job with* MICHIGAN"

MICHIGAN

MICHIGAN POWER SHOVEL COMPANY
495 SECOND STREET, BENTON HARBOR, MICHIGAN, U.S.A.

Associated General Contractors Hold

MORE THAN 1,200 delegates attended the 30th annual convention of the Associated General Contractors of America at the Waldorf-Astoria in New York early last month, making it one of the largest meetings ever held by the association. Principal topics of discussion included general and construction economics, construction markets, labor relations, legislation, and government contracting procedure. Two afternoon sessions split up into highway, heavy and building division meetings, allowing for more detailed discussion of problems.

Among several resolutions adopted were those calling for Congressional clarification of basing point pricing systems and plans for cooperating with the American Society of Civil Engineers in construction engineering education programs.

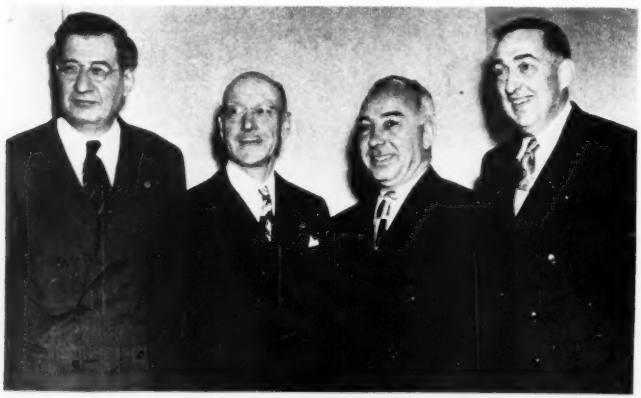
New officers for the coming year include: President, Adolph Teichert, Jr., Sacramento, Calif.; Vice-President, Walter L. Couse, Detroit.

ADOLPH TEICHERT, JR.
Beams at his election to A.G.C. Presidency for next year.

PROF. SUMNER H. SLICHTER
Spouts economics galore.

REV. ROELIF H. BROOKS
Prays for contractors.

DWIGHT W. WINKELMAN
Gets great ovation upon his retirement as President.



OLD, NEW AND CONTINUING top brass of A.G.C. records this shot for posterity. They are: H. E. (DOC) FOREMAN, managing director; ADOLPH TEICHERT, JR., new president; DWIGHT W. WINKELMAN, retiring president; and WALTER L. COUSE, incoming vice-president.

NEW OFFICERS of the A.G.C. Building Division are C. P. (Gabby) STREET, Charlotte, N. C., and D. A. HARMON, Oklahoma City, chairman and vice-chairman.

Thirtieth Annual Convention in New York

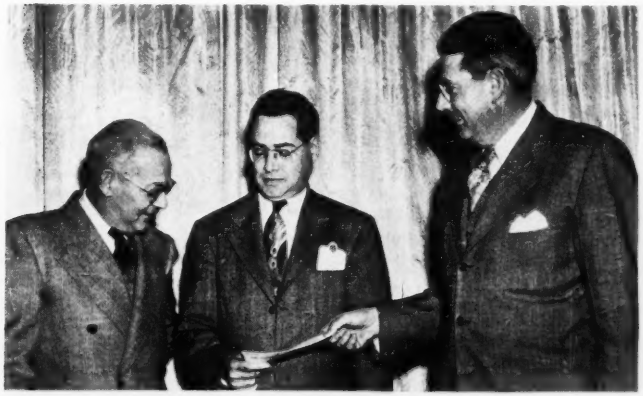
Mich.; Secretary-treasurer, William Muirhead, Durham, N. C.; Managing director, H. E. Foreman, Washington. Division chairman and vice-chairmen are: Heavy, Arthur S. Horner, Denver, and John F. MacLeod, Clearwater, Calif.; Building, C. P. Street, Charlotte, N. C., and D. A. Harmon, Oklahoma City; Highway, Carl E. Nelson, Logan, Utah, and N. K. Dickerson, Monroe, N. C.

Our cartoonist, Ed Randall, attended the opening session with the accompanying results. If you don't appear in the sketches below, look above, for perhaps you are one of the unidentified in the top borders.

DOC FOREMAN
In his usual jovial mood. Takes all conventions in stride.

CARROL M. SHANKS
Prudential Insurance prexy tells 'em all about private investments.

WALTER L. COUSE
Smiles because he doesn't realize what's ahead as new vice-president.



CONSTRUCTIONDIZING AWARD is presented by C. P. STREET, (right) chairman of award committee to R. J. HENDERSHOTT, manager of A.G.C. of Minnesota in recognition of Chapter's apprenticeship program while Chapter president GEORGE HELLER beams approval.

HEAVY CONTRACTORS DIVISION is now in capable hands of ARTHUR S. HORNER, Denver, chairman, and JOHN F. MacLEOD, Clearwater, Calif., vice-chairman.

DOUBLE CURVE Cutting Edge

Means Faster, Better Scraper Loading

1. A top-to-bottom curve, with the lower part of the cutting edge lying at a less steep angle than the top.

2. An end-to-end "bowing", so that both ends of the cutting edge project further forward and upward than the middle of the cutting edge.

Bucyrus-Erie 4-wheel scrapers get more pay dirt per yard of rated capacity than any other scrapers on the market. Tops among the reasons is the exclusive double-curve cutting edge which "boils" dirt up while it's being loaded, keeps it on the move, filling the scraper in the quickest, most efficient way.

The top-to-bottom curve directs the dirt upward so that it rises up through the load and rolls out on top, spreading forward into the apron as well as back into the bowl. The end-to-end curve causes easy and speedy penetration into the ground . . . also directs dirt toward the center of the bowl, away from the sides.

The resulting "boiling" action loads the scraper quickly, uniformly . . . it reduces chunks and voids, produces more pounds of dirt per cubic yard . . . it fills the scraper easily, requires less horsepower for loading.

BUCYRUS-ERIE CO., South Milwaukee, Wisconsin

See Your INTERNATIONAL Industrial Tractor Distributor

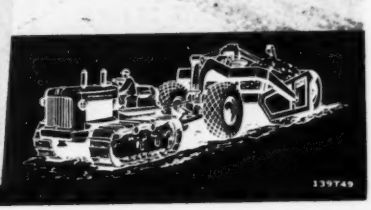
S-Type: 4 to 10 cu. yd.

BUCYRUS ERIE **4-WHEEL SCRAPERS**

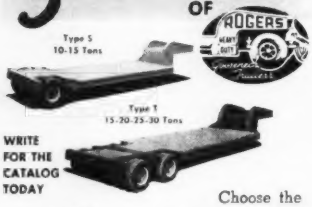
MORE pounds of dirt per cu. yd.
LOWER horsepower requirements
FULL loads quickly . . . short run
EVEN distribution of load
UNIFORM load density . . . easier ejecting and spreading

- Adjustable bar-type push bumper
- Two-section apron . . . adjustable to suit material
- Big single tires . . . same size all around
- Torque-rod bowl return
- Low center of gravity . . . great stability
- Streamlined goose neck . . . low fairlead sheaves
- Wedge-socket cable anchors
- Drop-center front axle
- Reversible side cutters
- Sliding-type bowl lock
- Double-disc drum-type wheels

B-Type: 15 and 22 cu. yd.



5 BASIC TYPES OF ROGERS



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Choose the one that most nearly meets your needs and ideas. We'll develop a trailer "tailored" to conform to your ideas, adapted particularly to your tractor and efficiently designed to your specific kind of hauling.

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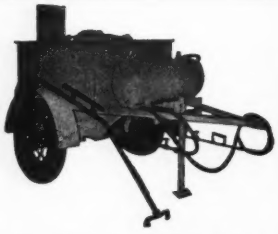
220 Orchard Street
ALBION, PA.
EXPERIENCE builds 'em
PERFORMANCE sells 'em



HEATING KETTLES
FOR ASPHALT AND TAR
Fire Proof — Oil Burning
Hand and Motor Driven Spray

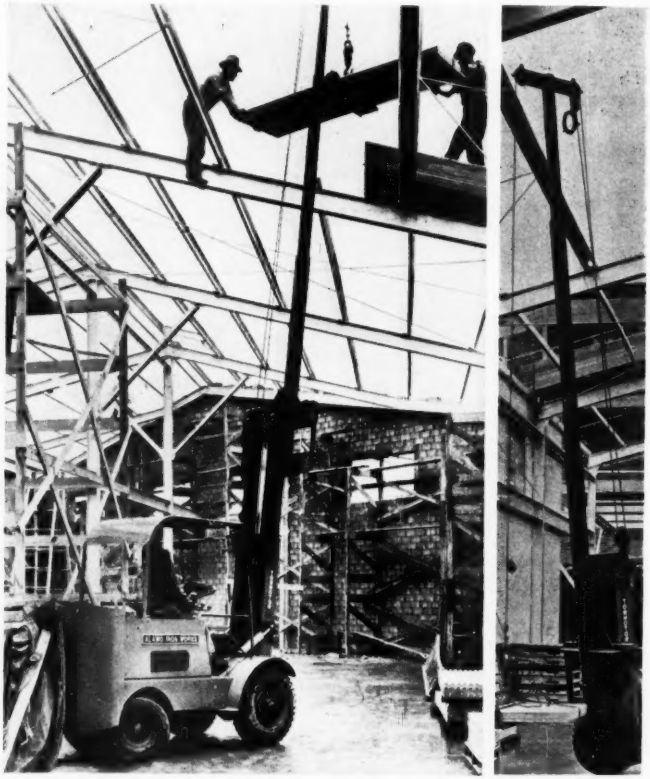
Other Products
CONCRETE VIBRATORS
Gasoline Engine and Electric Motor Driven Models
FRONT END SHOVELS
For Industrial Tractors
AGGREGATE DRYERS
for Stone and Sand
ASPHALT PLANTS
Portable — Stationary
Write for Circulars

White Mfg. Co.
ELKHART INDIANA

Fork Lift Crane Doubles as Erector

McGRAW-HILL WORLD NEWS

ERECTION of a steel frame addition to the Alamo Iron Works in San Antonio, Tex. was not a big enough job to make use of a regular crane practical, so ingenious Baxter Grier, assistant superintendent, built his own by installing an 18-ft. boom on a Towmotor Fork Lift Truck. When added to the original 9-ft. lift of the truck the new boom, made of graduated 6-, 5-, and 4-in. pipe, gives the rig a total reach of 27 ft. At the top of the boom is a yoke with sheaves at both ends over which operates a pulley system with a mechanical advantage of one-half. Hence, by raising the boom 9 ft. on the truck lifting assembly, the operator hoists his load 27 ft. With this little unit, 200 steel sections were put up and all roofing material was raised to the rafters, 25 ft. above the floor. The mobility of the fork lift truck in confined areas and its versatility cut construction time considerably.



REINCARNATION. One day it's a fork lift and next day it's a crane. Boom attached to lifting assembly gives home-made crane a 27-ft. reach for raising roof slabs and steel sections on Texas iron works job. Pulley system, with mechanical advantage of one-half, operates over double-sheave yoke arrangement (right).

it's easier to

keep machines always in top "working trim"

with ALEMITE LUBRICATION EQUIPMENT

Modern Alemite Equipment is rugged and dependable, engineered specifically for heavy-duty service on all types of construction jobs under all temperature conditions. Assures safe, positive lubrication that makes construction equipment produce more profitably, last longer. Prevents waste and contamination of lubricants . . . saves you time, work, and money.

Illustrated here are but four models in the complete line of Alemite Lubrication Equipment for the construction industry. For full information on these, or any other equipment you need, write Alemite, 1840 Diversey Parkway, Chicago 14, Illinois.

Alemite "Rock Crusher" High Pressure Pump

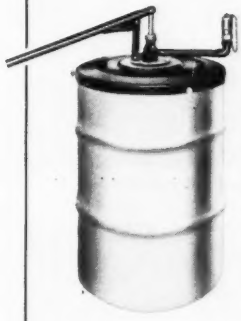
This husky air-operated pump makes light work of the hardest lubrication jobs. Handles a volume delivery of heavy fibrous lubricants even at low temperatures. Improved helix arm and worm gear feed assure positive priming of heaviest greases. Builds 5000-pounds grease pressure.

Alemite Barrel Pumps Powered by Rugged Air Motors

Built to handle the toughest lubrication jobs with ease. Pump lubricants directly from original drums at pressures up to 8000 lbs. Serve one or more outlets. Feature "Dynamic" Primer which adds positive mechanical priming, permitting easy handling of light, heavy and fibrous lubricants.

Alemite Air Operated Heavy-Duty Oil Pumps

Designed for fast, large-volume dispensing of oil or fluid gear lubricant right from original drum — without waste or contamination. Ideal for filling engine crank cases, transmissions and other large oil reservoirs. Fits directly into bung-hole of 54-gallon drum.



Alemite Loader Pumps

For quick, easy filling of hand guns without waste or contamination. Prevent the air pockets which result from hand-and-paddle loading methods. Save 3¾ man hours for every 100 lbs. of grease used. Model shown here fills guns directly from original 100-lb. lubricant drums.

***FREE** — Interesting illustrated booklet, "Correct Lubrication in the Construction Industry." Packed with valuable facts on the lubrication needs of various machines, proper selection of lubricants, proper handling and application of lubricants. Send now for your free copy.*

STEWART WARNER

ALEMITE

REG. U. S. PAT. OFF.

Modern Lubrication Methods That Cut Production Costs

Bethlehem Reinforcing Bars in bridge deck. Nearly 45 tons of reinforcing steel were used in this structure.

Straightening Out U.S. 220

Over she goes! Two men move Bethlehem Bar Mat into place over initial course.

An after-lunch chat. Left to right: Al Diehl and Joseph Schuessler, inspectors, both of Pennsylvania Department of Highways; Robert Rosser, contractor; and Emory Grove, foreman.

Inserting installing-cap over Bethlehem Dowel Unit. In finished lane this unit will function as contraction joint.

One of the many road-modernization projects undertaken in recent months by the Pennsylvania Department of Highways was a 4427-ft stretch of U. S. 220, located in the Cessna, Pa., area. The two-lane job included a bridge, and was handled by Rosser Construction Co., of Mt. Joy, Pa. Bridge reinforcing, bar mats, dowel units and cable guard rail were supplied by Bethlehem. Various phases of the construction are shown in the accompanying pictures.

Completed bridge ready for traffic. Bethlehem Cable Guard Rail, mounted on steel posts at bridge approaches, provides constant protection for motorists.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand • Pipe
Hollow Drill Steel • Spikes • Bolts and Nuts
Timber Bridge Hardware • Tie-Rods
Sheet- and H-Piling • Fabricated Structural Steel

BETHLEHEM STEEL

Cited for Service

GEORGE M. DRAKE

FEW OF HIS FRIENDS know that once upon a time George M. Drake played a Sousaphone in a circus band. This august gentleman, now head of the internationally-known contracting firm of Johnson, Drake & Piper, Inc., not only tooted the big horn, but played it wrapped around his neck while riding a horse as a member of Ringling Bros. mounted band. Today he is as proud of that accomplishment as he is of his spectacular construction achievements.

Drake was born at Madilla, Minn., August 3, 1885. After completing high school he tried school teaching for a while, then joined the circus. Soon, however, he joined his father in freighting dynamite and commissary supplies at 1c. per cwt. per mile for Wickham Bros. on the Milwaukee R.R. construction between Mobridge, S.D. and Miles City, Mont. After three years of freighting he had acquired a big enough stake to realize a long-time ambition—to enter an engineering school.

The quickest way to get back to the University of Minnesota, school of his choice, was to walk 86 mi. to the nearest through railroad, the N.P.R.R. at Wibaux, N.D. He made the long trek in high button shoes, his high school graduation gift, and he has never forgotten that experience. Drake entered the School of Mines, and after working summer vacations in Colorado mines, graduated in Mining Engineering in 1911.

The young graduate took the nearest job at hand, superintendent for Al Johnson Construction Co. in remodeling buildings on the Minnesota campus. He claims he early became a specialist, for one of his first jobs was that of revamping the toilets in the Old Soldiers Home. After a year or so, he joined his brother in mining exploration work in Alaska, then worked for a while around Seattle and in 1913 went back to Minneapolis to join Al Johnson as partner in Johnson & Drake Construction Co. In 1919 Louis Piper joined the firm, reorganized as Johnson, Drake & Piper, Inc. Al Johnson pulled out of the company in 1926, and Drake became president, the position he has held ever since.

Keeping the main office at Minneapolis, the firm eventually established branches at New York City, Oakland and Terre Haute. Though specializing in highway construction throughout the years, including the Pennsylvania Turnpike and principal roads on Long Island, the firm has also done lots of railroad, heavy and building construction throughout the country. At present they are building 150 mi. of highways in Guatemala for the local government.

The company's first overseas job was early in the war in joint venture as Sims-Drake-Puget Sound on naval base construction in the Aleutians. Their construction forces were in the midst of the Jap attack on Dutch Harbor in June 1942. Under their own name, they are once more back in the Aleutians on military construction.

Their biggest overseas job was the huge war-time bases in Eritrea, Arabia, Egypt and Palestine. In this country they built big Army and Navy bases at Alameda and Oakland, Calif., and Newark, N. J., and also 100 knockdown wooden work-boats.

Today the firm is spread all over the world. As Utah-Drake-Grove they are in the Philippines, and as Atkinson-Drake they are in Greece on railroad and highway rehabilitation. Just recently they were kicked off an aqueduct in Caracas, Venezuela, by a local revolution. In the United States they are busy on all kinds of projects from coast to coast.

George Drake sums up the history of his company in a single phrase: "Conservation of resources." This is just another name for smart, aggressive but conservative construction management. An example of that excellent management under Drake's direction is the "Manual of Job Office Procedure" compiled as a guide to construction office work, reproduced by CONSTRUCTION METHODS in three installments ending with the current issue.

From tooting a circus horn to 23 years as head of a highly successful contracting firm is a long step, but George M. Drake has taken that step in stride.

CARTER
CARTER
CARTER

in England

McGraw-Hill World News

WHILE IN THE PROCESS of spanning a busy junction between the Hudson and Hendon Docks in Sunderland, England, without disrupting water traffic, the River Wear Commission (Sunderland Port Authorities) recently turned up with the world's first aluminum-alloy bascule bridge. The light material was specified in this case to facilitate quick, easy handling in erection, fixed approach spans and foundation girders only being of mild steel.

Bridge Floated to Site

Fabricated by Head, Wrightson and Co. at Thornaby-on-Tees, 30 mi. down coast, the bridge was floated to the site by power craft. Only 40 percent of the weight of similar steel structures, bridge leaves were easily handled by a floating crane. One month from the time the first leaf reached the site, erection of the entire structure was completed. Through skillful timing and fast work the job was done without interference to ship passage in or out of docks.

The bridge is 121 ft. c. to c. of trunnions and carries a single track railway centered in a 9-ft. roadway. Two 4-ft. 9-in. sidewalks bring total freeway width to 18 ft. 6 in. Design allows maximum railroad load of 70 tons on two axles or a train of 15-ton loads at 10-ft. centers. Maximum road load is a 75-ton trailer on two 4-wheel axles and sidewalks are designed for 56 lb. per sq.ft. The bridge leaves a 90-ft. clear span opening to the dock.

Construction Personnel

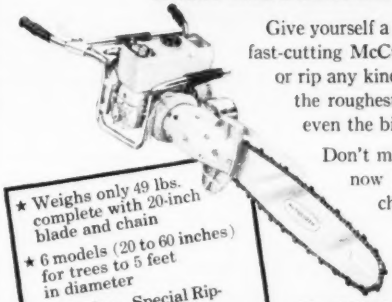
Design and execution of the project were in the hands of W. H. S. Tripp, engineer for the River Wear Commission. Superstructure was designed by F. J. Walker of Head, Wrightson and Co., with D. V. Pike, structural engineer of the Aluminum Development Association, consultant on choice of alloys. Plates and extruded sections for the bridge totalling only 51½ tons, were supplied by the British Aluminum Co. Ltd. and Northern Aluminum Co., Ltd.

A WORK OF ART! Completed shiny new bridge spans 90-ft. channel which connects Hudson and Hendon docks in Sunderland Harbor. Project was executed by River Wear Commission under leadership of W.H.S. Tripp.

FASTER LAND CLEARING means LOWER bids

McCULLOCH McC CHAIN SAWS

In wooded country, you can save days with McCulloch Chain Saws



Give yourself a competitive advantage by using fast-cutting McCulloch chain saws to fell, buck, or rip any kind of wood. You can use them in the roughest country—and they'll fell trees even the biggest dozer can't handle.

Don't miss a bet in figuring costs. Send now for information on McCulloch chain saws. We'll be glad to answer your questions on the use of chain saws for construction and land-clearing.

★ Weighs only 49 lbs. complete with 20-inch blade and chain
★ 6 models (20 to 60 inches) for trees to 5 feet in diameter
★ Full 5 hp...Special Rip-Cross chain is easily sharpened without special tools
★ Price...only $385.00 f. o. b. Los Angeles (20 inch model)

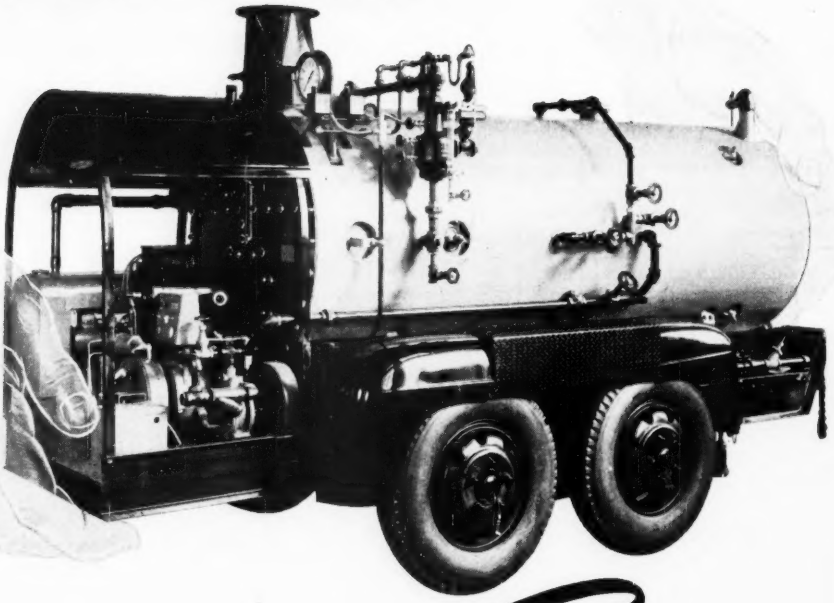
McCULLOCH MOTORS CORP.
6101 W. Century Blvd.
Los Angeles 45, Calif. Dept. MC

SEND FOR FULL INFORMATION

McCulloch Motors Corp.
6101 W. Century Blvd., Los Angeles 45, Calif., Dept. MC
Please rush complete information on the 5-hp McCulloch power chain saw and name of nearest dealer.
Name .....
Company .....
Address .....
City ..... Zone ..... State .....

209

It's portable . . . It's packaged



PUT IT WHERE YOU NEED *Steam*

★ READY MIX CONCRETE PLANTS ★ BITUMINOUS MIXING PLANTS
★ PILE-DRIVING ★ ASPHALT STORAGE TANKS ★ TANK CAR HEATING
★ AGGREGATE HEATING ★ WINTER CONCRETE OPERATIONS

COMPLETELY packaged unit — portable — suitable for a wide range of construction work such as — asphalt plant, storage and tank car heating, aggregate heating, ready or hot mix plants, pile driving, and winter concrete work for both hot water and steam for curing — this Cleaver-Brooks Steam Generator will save time and money on many of your operations.

Available in 80 HP and 125 HP—150 PSI. (For permanent installation a capacity range of 15 to 500 HP is available in other Cleaver-Brooks packaged steam generators.)

Clean, smokeless and require no ash disposal. Provide the easiest fuel handling. Complete safety protection — a four-pass boiler designed in accordance with A. S. M. E. code; inspected and approved by Hartford Steam Boiler Inspection and Insurance Company.

CLEAVER-BROOKS COMPANY
387 E. Keefe Ave., Milwaukee 12, Wis.

Cleaver-Brooks

PORTABLE • PACKAGED STEAM GENERATORS

80 H.P. — 125 H.P. — 150 P.S.I.

EXPRESSLY DESIGNED FOR CONSTRUCTION OPERATIONS

- Fast Steaming
- 80% Efficiency
- Low Cost Operation
- Light-Weight
- Skid Mounting for Truck or Trailer
- Low Fire Start
- Modulating Control of fuel oil — assures constant steam pressure
- Electric Ignition
- Burn any Fuel Oil up to Commercial standard CS12-48
- Self-Contained Fuel Tanks
- Full Weather Protection
- Factory Finished and Tested
- Choice of Gas or Electric Motor

Send today for illustrated catalog on the Cleaver-Brooks Model LFM Steam Generators.

Built by the Pioneers and Originators of Packaged Steam Generators — Tank Car Heaters — Bituminous Boosters

Pair of LINK-BELT SPEEDER Shovel-Cranes Speed Sewer Job

One LS-85 rigged as a back-hoe opens the 10 ft. trench, loading trucks with spoil. The other with hook block lowers the pipe, up to 90" in diameter, into the trench, and with clamshell, back fills. Team work of machines kept the street blocked only for short periods. Owner and operators all praise the fast powerful Link-Belt Speeders, and the helpful courteous service of Link-Belt Speeder distributors.

With crane-boom, the Link-Belt Speeder will handle numerous lifting, handling and erection jobs, or excavate with clamshell or dragline bucket. Quickly converted to shovel or trench hoe, it is ready for heavy digging of all kinds. The LS-85 has earned the nickname "Super ¾ yard" Shovel-Crane, by its extra strength, power and maneuverability.

•

In the Link-Belt Speeder line, there is a wheel-mounted, crawler-mounted or truck-type machine to suit every purpose, in capacities up to 3 yards, and convertible to all regular front end attachments. There is a Link-Belt Speeder distributor near you, with a stock of original Link-Belt Speeder parts and a crew of factory trained men. Call on him for information regarding this most complete line of Shovel-Cranes.

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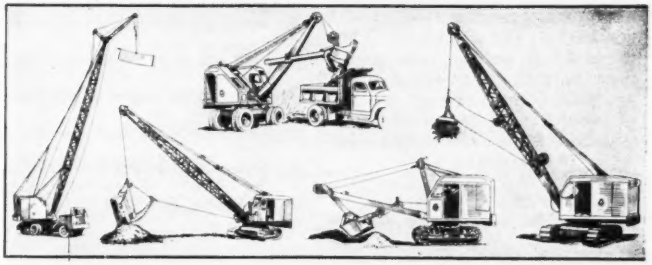
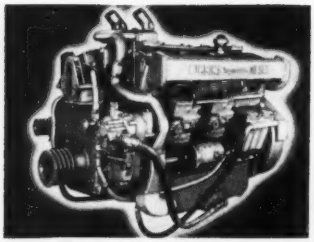


LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of SHOVELS-CRANES-DRAGLINES



NEW CUMMINS diesel engine in supercharged model develops 550 hp. at 2,100 rpm. Two banks of 6 cylinders each are set in common block at 40-deg. V-angle. This view shows new type fuel pumps, one serving each bank of cylinders.

NEW ENGINE is given rough field test in powering experimental model Manitowoc 3½-yd. shovel with 60-ft. boom and 45-ft. dipper stick being tried out by Superior Coal Strippers, Inc., Terre Haute, Ind.

Big High-Speed Diesel for Big Rigs Unveiled by Cummins Engine Co.

A NEW HIGH-SPEED diesel engine was unveiled March 17 by Cummins Engine Co., Inc., at a press preview at the Columbus, Ind., plant attended by 45 representatives of business and trade papers, newspapers and wire services. The engine, made in two series, is a 12-cyl. 4-cycle V-type operating at 2,100 rpm. The NVHS model, equipped with a Roots type gear-driven supercharger, develops 550 hp., and weighs only 4,550 lb., or 8.3 lb. per hp., rated as the most powerful high-speed diesel yet built. Identical except for lack of supercharger, the NVH model develops 400 hp., and weighs 4,300 lb., or 10.8 lb. per hp.

Two banks of six cylinders each are set at a 40-deg. angle in a common engine block of high-strength alloy iron. Separate cam shafts and fuel pumps serve each bank. Cylinders, fitted with removable liners, are staggered in each bank to permit regular piston rods being mounted side by side on the crank pins. Crank shaft bearings, both main and rods, are interchangeable. The 12 cylinders of 5⅛-in.

The fourth of a series in the interest of more efficient use of steel . . . a vital American resource.

INHERENT STRENGTH

the strength of rail steel plus the bond of Laclede Multi-Rib Design

The actual inherent strength of rail steel is fully harnessed for work in the Laclede Multi-Rib bar design. Rail steel rolled into bars with Multi-Rib design offers a yield strength *in excess* of 55,000 PSI—with greatly increased anchorage. Laclede Multi-Rib Reinforcing Bars meet the new ASTM Specification A 305-47T, which provides a long-needed yardstick for anchorage in reinforcing bars, assures a more efficient use of steel.

Modernize your specifications with ASTM A 305-47T!
Modernize your steel reinforcing with Laclede Multi-Rib Bars!

LACLEDE
Producers of Construction Steel

LACLEDE STEEL COMPANY
St. Louis, Mo.

RUGGED FIELD TESTS are given the new Cummins supercharged 550-hp. V-type diesel engine by M. A. Hanna Co. in big experimental ore hauling trucks on Mesabi Range. Shown here is 40-ton Euclid "Grandpa" end-dump truck equipped with engine. Tests are also being made on a Mack 30-ton end-dump rig.

bore and 6-in. stroke displace 1,486 cu.in.

Cummins has had the engine under actual field tests for some time in big shovels, trucks and switching locomotives. It is designed for heavy construction, mining, logging and petroleum equipment, for large trucks, industrial locomotives, rail cars and stationary installations. Marine models will be available later.

After the unveiling ceremonies, the guests were taken on a tour through the plant. They were greatly impressed by the precision operations, testing and quality control, and by the fact that every engine is torn down for inspection after a test run.

"If you want to put in a little overtime tomorrow, you can see the big game absolutely free."

WATER
WELL DRILLING
with the
CALIFORNIA
EARTH BORING MACHINE

For large diameter water wells, not over 250′ in depth, the California Earth Boring Machine has definitely proved its superiority to old-fashioned methods. One well known water well drilling contractor bought his first California Earth Boring Machine in 1946, and has since operated it 3,500 hours without major overhauls, at an average income of $10.00 per hour. Since that time, two more California Earth Boring Machines have been added to his equipment.

SEND FOR LITERATURE

The complete story of jobs performed by the California Earth Boring Machine in every field of bucket type drilling, with costs and engineering data, is yours for the asking. A full color, full length motion picture of the operation of the California Earth Boring Machine will be shown in your office by a factory trained engineer, without obligation, if you wish him to call.

California Welding & Blacksmith Shop, Inc.
7222 East Slauson Avenue, Los Angeles 22, Calif.

Largest Selling . . . Lowest Costing

CHEVROLET ADVANCE-DESIGN TRUCKS

Lead Them All!

CHEVROLET You'll discover a new kind of value when you drive and ride in these Advance-Design Chevrolet trucks. You'll find fleetness and flexibility, power and massive strength and long-lasting quality in every feature of body, frame, cab and chassis. Yet, you enjoy all these premiums *at lowest cost*, for Chevrolet trucks have 3-WAY THRIFT—low-cost operation, low-cost upkeep and the *lowest list prices in the entire truck field!*

CHEVROLET MOTOR DIVISION, *General Motors Corporation* DETROIT 2, MICHIGAN

The leader offers all these features

Chevrolet's 4-SPEED SYNCHRO-MESH TRANSMISSION offers quicker, quieter and easier operation in Series 3800 and heavier duty trucks. Faster shifting maintains speed and momentum on grades.

Chevrolet trucks have the famous CAB THAT "BREATHES"*! Outside air is drawn in and used air forced out! Heated in cold weather.

Chevrolet's power-packed VALVE-IN-HEAD ENGINE provides improved durability and efficiency as well as the world's greatest economy for its size!

Chevrolet Advance-Design brings you the FLEXI-MOUNTED CAB, cushioned on rubber against road shocks, torsion and vibration.

Chevrolet's exclusive SPLINED REAR AXLE HUB CONNECTION adds greater strength and durability to heavy-duty models.

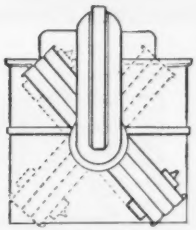
Uniweld, All-Steel Cab Construction • Large, Durable, Fully-Adjustable Seat • All-Round Visibility with Rear-Corner Windows* • Heavier Springs • Super-Strength Frames • Full-floating Hypoid Rear Axles on the 3600 Series and Heavier Duty Models • Specially Designed Brakes • Hydrovac Power Brakes on Series 5000 and 6000 Models • Standard Cab-to-Axle Length Dimensions • Multiple Color Options.

**Heating and ventilating system and rear-corner windows with de luxe equipment optional at extra cost.*

CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!

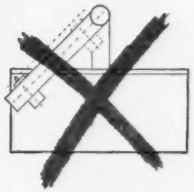
DELTA
MILWAUKEE
®

Model 50A



You Get This Advantage

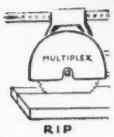
You can get an unlimited number of saw positions, with the Delta Multiplex center-pivoted saw arm. It can be set quickly to cut any miter—either right- or left-hand—at full capacity up to 90°. The saw rotates through 360°.



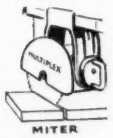
You Avoid This Limitation

Conventional radial-arm saws pivot from the column. This old way, you have practically no mitering capacity at 45°, not much usable capacity at 30°, and almost none beyond 45° on left-hand miters.

RAFTER NOTCH



RIP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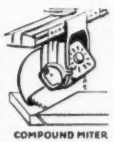
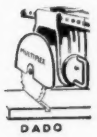

COMPOUND MITER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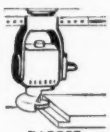
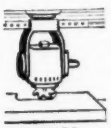
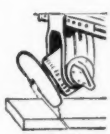

RABBET


SHAPE

PLOUGH

TENON


BEVEL CUT OFF

You have *more capacity* to do more kinds of work . . . right at the job

. . . when you take along a DELTA® Multiplex Radial-Arm Saw

You can get any cross-cutting, ripping, and mitering position, with a Delta Multiplex. The patented "Versatile Elbow" makes that quick and easy. It's a center-pivoted track that carries the cutting head and lets you put the blade at any angle. The cutting arm rotates 360°. You get 100% mitering capacity.

Model 50A's movable table helps you take advantage of the full usable travel of the cutting head in all positions. Together with the "Versatile Elbow," this table gives you greater capacity. You cut *full-length* miters from 0° to 90° — *left-hand,* as well as right-hand, miters.

Delta Multiplex Model 50A takes a standard 16″ blade, although a 20″ blade can be used. This machine has a rip capacity up to 6″. It is available with a 3, 5, 7½ or 10 h.p. motor.

Inspect the 50A now on your Delta distributor's sales floor. His name is listed under "Tools" in the classified section of your telephone directory. Ask him to point out the features that assure safety, speed, convenience, capacity, and economy. Also ask him about buying Model 50A on easy credit terms.

Send coupon for Bulletin AD-444.

DELTA MANUFACTURING DIVISION
ROCKWELL MANUFACTURING COMPANY
MILWAUKEE 1, WISCONSIN

Tear out coupon and mail today!

DELTA MANUFACTURING DIVISION
3834D N. Pierce Street, Milwaukee 1, Wisconsin

Send me free copy of Bulletin AD-444.

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AS-13

MORETRENCH WELLPOINTS LOWER WATER 90 FEET

for Neversink Dam cutoff wall, New York

Excavation for 2,460-ft. core wall construction was made in sand, gravel and clay . . . ninety feet below normal water level. Job went ahead *fast* "in the dry"! Contractor: S. A. Healy Co., White Plains, N. Y.

To cut the high cost of pumping count on MORETRENCH

MORETRENCH CORPORATION

NEW YORK, N. Y. CHICAGO, ILL. TAMPA, FLA.
HOUSTON, TEXAS ROCKAWAY, N. J.

TERRA COBRAS PAY OFF ON 4500-FOOT HAUL!

Two Model TC-S14 Wooldridge Terra Cobras on Route 22 near Pittsburgh, Pa., where cut and fill operations required moving 800,000 cu. yds.

SCRAPERS: Boiling Bowl and Terra Clipper Scrapers from 7.5 to 27.5 cu. yd. heaped capacities.

RIPPERS: Three models: for extra heavy, standard, or light duty.

BULLDOZERS and Trailbuilders for all standard makes of tractors.

POWER CONTROL UNITS: Two-drum winches for use with all standard tractors.

On long or short hauls, Terra Cobra's quick loading, high haul speeds, and fast spreading or dumping pay off in higher profits. These powerful 200 hp Wooldridge self-propelled earthmovers have proved their ability to handle greater yardage at lower cost per yard. "Easy on the operator," states the shift boss. That means more profit, too, with less slow-downs from operator fatigue. Due to positive two-wheel steering, powerful rear-wheel brakes, and many other proved Wooldridge features, higher speed operation is maintained throughout each shift with maximum safety.

Before you figure that next job, contact your nearest Wooldridge Distributor for complete details on the Terra Cobra. Prompt delivery is assured by placing your orders early.

WOOLDRIDGE MANUFACTURING CO.
Sunnyvale, California, U.S.A.

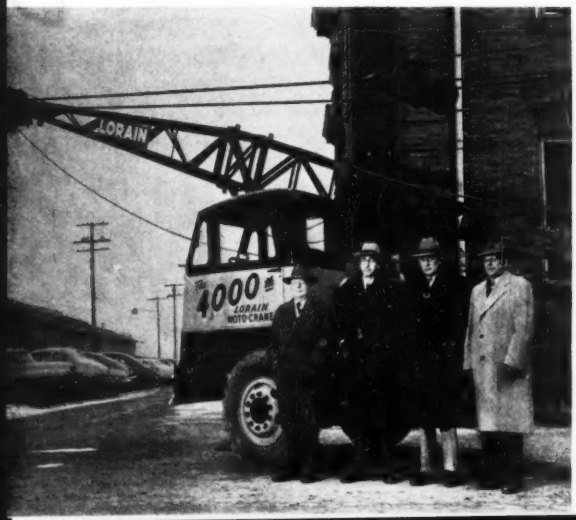
EARTH-MOVING EQUIPMENT
WOOLDRIDGE

PROVED AND APPROVED FOR EVERY TYPE OF EARTH-MOVING JOB

763-MI. TRIP in 46 hr. is made under its own power by LeTourneau Tournapull-scraper from Laredo, Tex. to Mexico City, when railway restrictions prohibited rail shipment. Photo shows equipment at journey's end in Mexico City.

MORE THAN HALF FINISHED steel superstructure of $3,500,000 high-level bridge being constructed for Army Engineers by American Bridge Co. at Chesapeake City, Pa. Col. F. F. Frech, Philadelphia District Engineer, states that bridge will consist of 540-ft. steel tied-arch truss span over Chesapeake and Delaware Canal flanked on each side by steel girder approach spans, with a distance of 3,955 ft. between abutments. Structure will carry 25-ft. roadway. Substructure comprising 32 concrete piers is completed. Ten million pounds of steel are going into superstructure. Traveling cranes on steel already in place handle largest girders weighing 36 tons.

4,000TH MOTO-CRANE leaves assembly line at plant of Thew Shovel Co., Lorain, Ohio. This 20-ton Lorain unit is turned over to M. B. GARBER (left), sales manager, by C. B. SMYTHE, Thew president, for delivery to Bethlehem Steel Corp., as E. W. JOHNSTON, general works manager, and R. H. ZEILMAN look on. The Lorain moto-crane was developed in 1939; its rated lifting capacity is 20 tons and it may be used with booms 115 ft. long.



FOR VEHICULAR TUNNEL under Houston Ship Canal, Pasadena, Tex., 375-ft. prefabricated welded steel sections of subaqueous tube are constructed on shipways of Ingalls Shipbuilding Corp. at Pascagoula, Miss., ready for launching and towing 400 mi. to tunnel site where four tube sections are to be sunk in dredged trench.—Acme Photo

Built for Long Life
IN TOUGH SERVICE

Typical of GMCs used in construction work is this tandem axle gasoline tractor which moves heavy rock-crushing equipment for an Iowa contractor. GMC heavy duties are offered in gasoline models of four different engine sizes and Diesels of four- and six-cylinder design, in weight ratings from 19,000 to 90,000 pounds.

GMC heavy duty gasoline and Diesel trucks are preferred by operators who haul heavy loads in tough, rugged going. Why? Because GMC heavy duties have engines, axles, clutches, transmissions, springs, frames and brakes specifically designed to move big loads . . . and to move them more dependably, for more miles, at low per-mile cost.

GMC heavy duty trucks are the product of the world's largest exclusive producer of commercial vehicles. They are sold and serviced by a nation-wide organization of truck transport experts. If you're in need of new heavy hauling equipment, let your nearest GMC specialist aid you in selection of a GMC exactly suited to your job.

GMC
TRUCKS
The Key to Greater Truck Value
GASOLINE · DIESEL

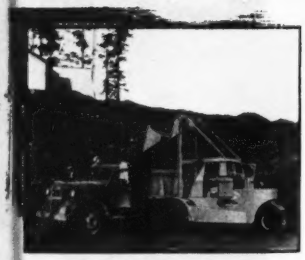
GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

VERSATILE PROFIT-MAKER

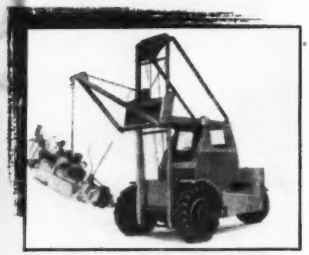
The New

SCOOP

MODEL "C"



Loading is easier, more practical. High ground clearance and shorter turning radius.



Lifts 4,000 pounds. Hoisting power is taken from the front of the engine to permit uninterrupted hoisting.

LIFT FORK

CRANE BOOM

CONCRETE HOPPER

FERTILIZER FORK

One machine—6 jobs

Built at the request of contractors, the Wagnermobile Scoop Model "C" saves time, labor costs by its many efficient uses.

- Transports, elevates and pours concrete.
- Shovels and loads dirt, etc.
- Lifts and stacks lumber and other materials.
- Handles fertilizer, hay and straw.
- Lifts heavy equipment.
- Reaches extra height.

Attachments:

- ¾ cubic yard concrete hopper.
- Scoops in 5 sizes.
- Lift fork with 2, 3 or 4 prongs.
- Special fork with tines for fertilizer, or hay.
- Crane boom.
- Track extensions up to a total of 26 ft.

These six attachments, quickly changed mean profit on the job. Wagnermobile Scoop helps you complete contracts faster.

Hydraulic controls.
Power steering-maneuverability.
Planetary drive—more power.
4 speeds forward, 4 speeds back.

MIXERMOBILE MANUFACTURERS

WAGNERMOBILE

6855 N. E. HALSEY STREET, PORTLAND 16, OREGON

HOLLYWOOD couldn't have done better. Thousands of visitors saw heavy equipment demonstrations, movies, fashion shows, and

Equipment Distributor Goes Hollywood With Plant Opening

CELEBRATING the opening of their new 5-acre plant in Albuquerque, N. M., the R. L. Harrison Co., largest earthmoving equipment distributor in the state, put on an open house and evening social extravaganza that the city won't forget for some time. It was

BELIEVE IT OR NOT this is an earthmoving equipment display room at 5-acre R. L. Harrison Company layout in Albuquerque.

enjoyed a buffet lunch during opening day activities at new Harrison plant. Here visitors inspect cutaways in display room.

real Hollywood technique tailored for equipment merchandising.

From 10 a.m. until 4 p.m. several thousand visitors, milling through the plant, saw demonstrations of $1,000,000 worth of Harrison Co. heavy equipment. At the same time Caterpillar movies and Bikini Bomb Test films were shown in another building. A buffet luncheon and fashion show completed the day's program. That evening Harrison played host to 2,000 guests at an Old-Time Party, complete with a burlesque show, melodrama, and

(Continued on page 72)

N. M. Old-time party here is climax to gala opening of huge new equipment distribution plant.

PROFIT AT BOTH ENDS

DUO-WAY

Dozer at one end... Scoop at the other

Both labor and equipment costs are cut by this versatile machine. It performs four operations: loader, dozer, truck and tractor—all in one. More profit.

An 84-inch, full size dozer blade dozes out a bank...then turns around...

1 cubic yard scoop at the other end scoops up the loose dirt, lifts and loads it.

Dozer blade: 3000 lbs. down pressure can be applied. Scoop can be filled on other end for ballast.

Duo-way Scoop features:

- Driver in sidesaddle position for all around vision and perfect control.
- Planetary drive for complete power output.
- All hydraulic controlled.
- Special tilt control track tilts 12° back, 9° forward.
- Top section folds down to 9 ft. 6 in. for low road clearance.
- Highway speed up to 25 m.p.h.
- 4 speeds forward, 4 speeds back.

Four operations performed by one machine, the Duo-way Scoop. It means more profit on every job.

Scoop lifts to a height of 14 ft. (easy loading). Additional height available by special order.

Write today for literature and address of your nearest dealer.

MIXERMOBILE MANUFACTURERS

6855 N. E. HALSEY STREET, PORTLAND 16, OREGON

a pair of PROFIT MAKERS
FOR READY MIXED CONCRETE PLANTS!
SMITH TILTERS
Famous all over the world for their fast charging, thorough "end-to-center" mixing and fast but fully controlled discharge. Ideal for central mixing plants because of low maintenance costs and rugged dependability, even when worked night and day. 4 sizes—1 to 4 yds.
SMITH-MOBILE AGITATORS
Meet all requirements such as fast loading, smooth agitating, effective mixing and HIGH discharge. Fast pouring or slow controlled discharge, as desired. No segregation. Large radius of spout distribution. 4 standard sizes.

★ If you are looking for BIGGER PROFITS from your Ready Mixed Concrete Plant, be sure to investigate both SMITH TILTERS for pre-mixing or pre-shrinking concrete and SMITH-MOBILE AGITATORS for delivering the pre-mixed or pre-shrunk concrete to the job. These modern, dependable machines are profit makers with a record of achievement that has never been equaled in the industry. They have many time saving and money saving features . . . enable you to deliver BETTER CONCRETE with speed and certainty, at low cost. Write today for descriptive literature.

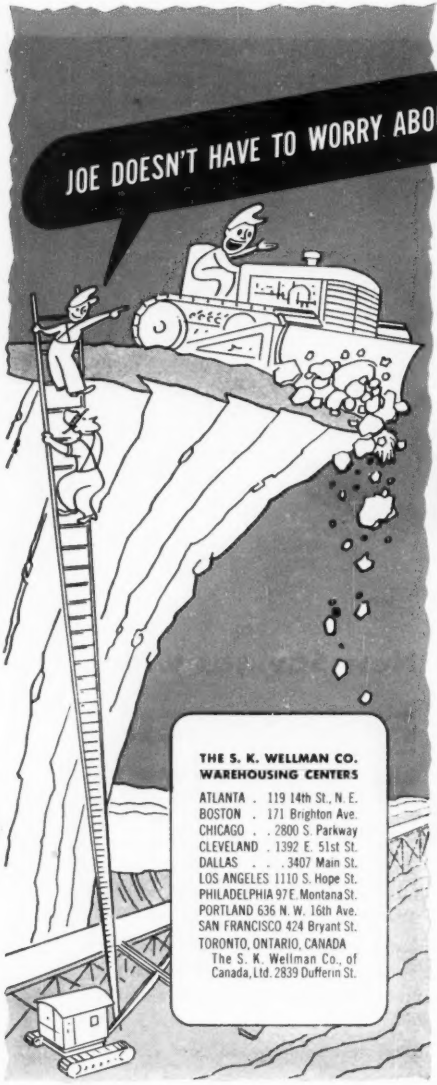
FAST COMPLETE DISCHARGE
Smith-Mobiles discharge ALL the batch, whether it's high or low slump concrete. And the discharge is easily controlled. Fast when you want it fast . . . slow when you want it slow.

THE T. L. SMITH COMPANY
2851 N. 32nd STREET • MILWAUKEE 10, WISCONSIN, U. S. A.

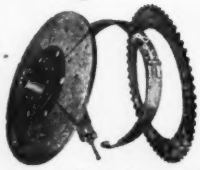
SMITH

CONCRETE MIXER MANUFACTURERS SINCE 1900

New Savings with
PREFORMED
WIRE ROPE
For the few who haven't used it—but who will—Preformed wire rope promises the same kind of savings in time and money that regular users have enjoyed since 1934.
Preformed lasts longer, thus costs less to use. It saves time and money in installation and operation. It is safer to use and reduces safety costs.
So, for new savings, see your wire rope manufacturer or supplier about Preformed wire rope.


JOE DOESN'T HAVE TO WORRY ABOUT HIS BRAKES . . .
THE S. K. WELLMAN CO.
WAREHOUSING CENTERS
ATLANTA . 119 14th St., N. E.
BOSTON . 171 Brighton Ave.
CHICAGO . . 2800 S. Parkway
CLEVELAND . 1392 E. 51st St.
DALLAS . . . 3407 Main St.
LOS ANGELES 1110 S. Hope St.
PHILADELPHIA 97 E. Montana St.
PORTLAND 636 N. W. 16th Ave.
SAN FRANCISCO 424 Bryant St.
TORONTO, ONTARIO, CANADA
The S. K. Wellman Co., of Canada, Ltd. 2839 Dufferin St.

his dozer's equipped with Velvetouch all-metal linings!



They're dependable, smooth operating . . . and they last longer. Because Velvetouch is all-metal! Can't rot in oil . . . or burn like ordinary material. Insist on Velvetouch brake linings, clutch plates, clutch facings, and steering discs . . . and watch your equipment stay out of the shop . . . and on the job!

FOR BRAKE AND CLUTCH USE

VELVETOUCH

ORIGINAL EQUIPMENT . . . WITH THE LEADERS

THE S. K. WELLMAN CO.

1374 East 51st St., Cleveland 3, Ohio

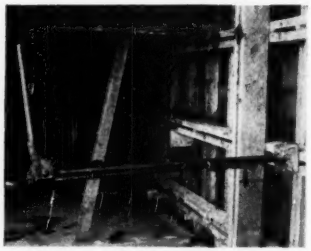
25 years of service 1924-1949

(Continued from page 69)

square dancing, held in the spacious equipment display building.

Covering 1½ acres, buildings for the new plant include (1) equipment display, general office sales, and parts department; (2) canteen and equipment display; (3) heavy equipment repair shop; (4) service department and machine shop; (5) welding and painting shop, and (6) storage sheds. Harrison built his business up from a small outlying garage started 20 years ago.

Hoist-Jack Simplifies Pulling Form Rods



HOIST JACK placed against form frees tierod without damage for reuse and saves tube expense.

A SAVING IN TIME, materials and money was made recently by use of a Coffing Hoist-Jack for removing tierods from forms in the construction of a new building for the Portland Cement Association at Skokie, Ill., near Chicago. This method of salvaging tierods was developed by the Turner Construction Co. with the aid and consultation of a Coffing Hoist Co. engineer.

With the base of the tool against the form, and the hook affixed to the tierod, the rod is simply jacked out of the concrete and form. This saves the rods and eliminates the expense of tubes. The 25-lb. hoist-jack is easily handled by one man, yet has the strength and pulling power necessary to overcome the adhesion of concrete to the rod.

The hoist-jack can be used as a jack or, without the stand, as a hoist or puller which makes it handy around construction projects for lining and straightening forms, capping piles, replacing cofferdam walers and for repairing and handling heavy equipment.

Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W STANG CORPORATION

2 Broadway, New York 4, N. Y.

8221 Atlantic Ave., P. O. Box 631, Bell, Cal.

TRAXCAVATORS TAKE ON ALL COMERS

FREE and EASY

Versatile TRAXCAVATORS take every job in their stride. In the open — their speed and fast action are money makers. Digging, loading trucks, stripping, leveling or stockpiling. Cut the operating costs on your job to the nub — use TRAXCAVATORS!

TIGHT and TOUGH

For tough going — and tight squeezes — TRAX-CAVATORS are compact, built close to the ground and handle fast and easy. Ideal for tight congested areas. There's also a size for every job and purpose. See your nearest TRACKSON-"Caterpillar" dealer or write direct to TRACKSON COMPANY, Dept. CM-49, Milwaukee 1, Wisconsin.

TRAXCAVATOR

REG. U. S. PAT. OFF.

THE ORIGINAL TRACTOR EXCAVATOR

Complete Dismantling of all operating parts is first step in . . .

Overhauling and Rebuilding a TD-18

ANOTHER EQUIPMENT MAINTENANCE FEATURE

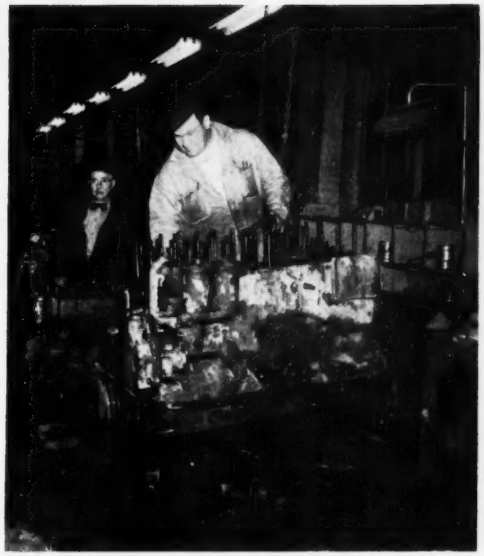
TRACK FRAMES are cleaned with mixture of special cleaning compound and steam at 300 psi. by Hypressure Jenny which knocks off all mud, grease and even loose paint scale. All other dismantled sub-assemblies of TD-18 get same treatment before ordering replacement parts. This makes it easy to spot any worn parts of cracked frames and insures a good paint job after tractor is overhauled and rebuilt.

SUCCESSFUL DISTRIBUTION of construction equipment is not confined to the selling of new equipment alone, but it also involves good customer relationships by periodic check-ups to see that the equipment is operating properly, as well as complete overhauling and rebuilding of used equipment. This is the philosophy of the W. W. Williams Co., Columbus, Ohio who have been in the equipment distributing game for the last 36 years.

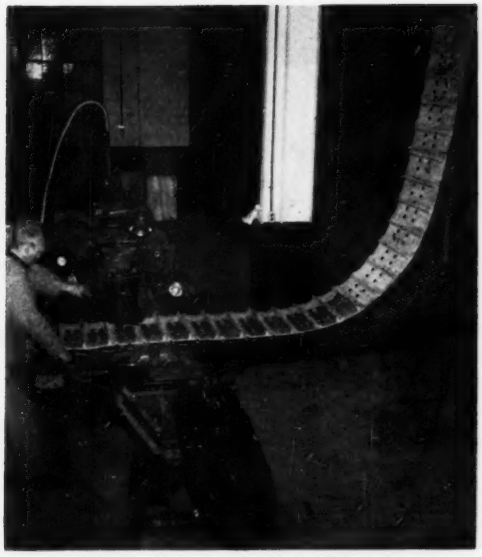
When they take on an overhauling and rebuilding job—such as the TD-18 shown in the accompanying photographs, they do it with a complete thoroughness that makes the end-product operate as good as new.

Cleaned With High-Pressure Steam—First step in overhauling this big tractor is to dismantle it completely in the main repair bay of the 200x100-ft. repair shop, an addition built last year in Columbus. Each sub-assembly is carried on a tongue-lift truck to the cleaning room. Most of the mud is knocked off with hot water at 75 psi., followed by steam-cleaning with a Hypressure Jenny, using a special cleaning compound. Motors are given additional cleaning in a tank solution.

After cleaning, the motor goes to the motor room for overhauling, and the various sub-assemblies are returned to the repair area. All are closely inspected for worn or cracked parts and those that cannot be metalized efficiently in the machine shop are replaced with new parts from a well-stocked parts room in one end of the building, operated on the perpetual inventory system.



MOTORS ARE REBUILT complete—except for reboring which is done by a commercial garage, if necessary—in well-equipped motor-repair room next to steam-cleaning room. Heavy motors are moved throughout shop by gasoline-powered Hebard "Mule-Lift" truck.



TRACK SHOES on TD-18 are in good condition after 4,900 hr. of operation, so new chains are added, with new bushings and pins installed by Rogers Pin Press powered by International U2 motor. 35-ft. roller conveyor makes handy workbench, while another 2-ton overhead Conco crane handles heavy parts.

Exchange Diesel Fuel Pumps—If motors need reboring, they are sent out to a commercial motor-repair shop. Fuel pumps on diesel equipment are handled on a flat-fee exchange system, with overhauling of the exchanged pump made in an especially-equipped repair room.

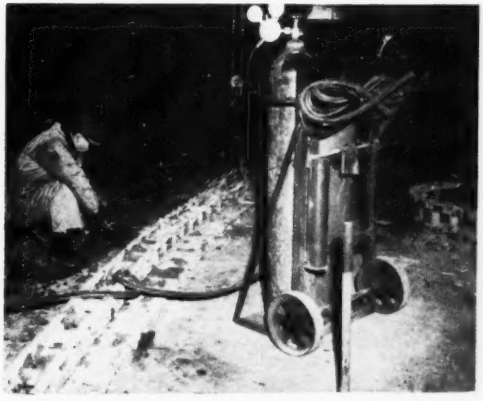
A 10-ton overhead Conco Crane handles the heavier parts, in the main repair area of the shop. A 2-ton Conco crane, overhead, handles the lighter parts in each of six repair bays.

In repairing track-treads, the nuts are burned off with an oxyacetylene burner, to save time, and the bolts knocked out. Track repairs are made on a 35-ft. roller conveyor, using a Rogers Pin Press to insert new pins and bushings.

Two Coats of Spray Paint—After all sub-assemblies have been overhauled, repaired and rebuilt, the piece of equipment is re-assembled, spray-painted with two coats, in the paint shop at one end of the repair shop, and tested, ready to go back on the construction job.

The Williams Co. has a total payroll of 118, of which 37 are mechanics. Heading up this sales, service and

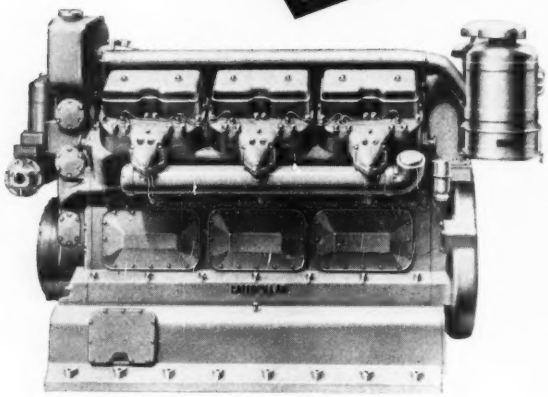
(Continued on page 78)



TRACK BOLTS are burned out (above) when replacing old chains on track shoes, or vice versa, while chain hoist (at right) running to 2-ton Conco crane, overhead, lifts chain clear of shoes.

...STILL

WHEN YOU THINK OF INDUSTRIAL AND CONSTRUCTION POWER, THINK OF THE BIG YELLOW ENGINES THAT SUPPLY SO MUCH OF IT



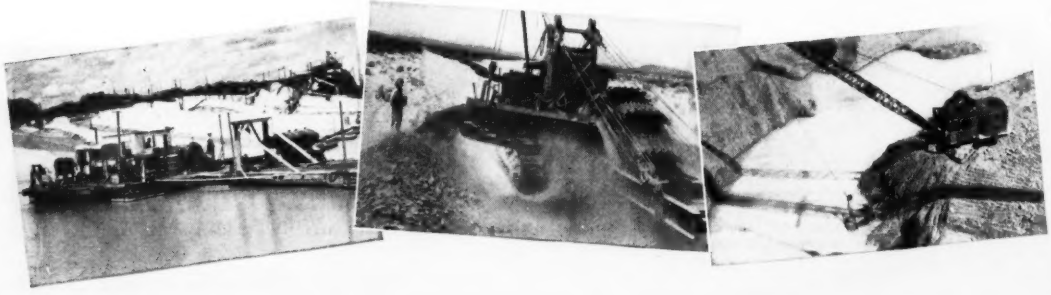
"CATERPILLAR" DIESEL D397 ENGINE — 500 hp. (max.) at 1200 rpm. V-12 – 5¾" bore x 8" stroke. Equipped with blower.

"CATERPILLAR" DIESEL D386 ENGINE — 400 hp. (max.) at 1200 rpm. V-12 – 5¾" bore x 8" stroke.

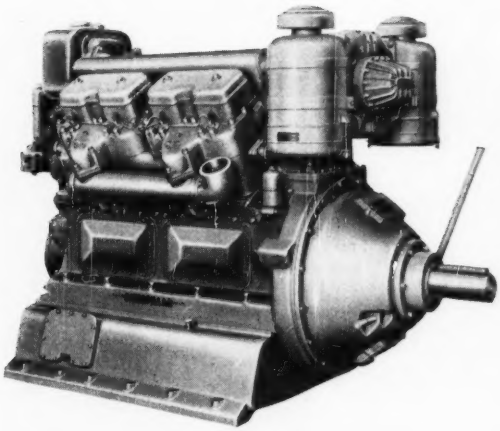
Now you can power your larger machines with available new-size engines that extend the range of "Caterpillar" Diesels to 500 horsepower. These bigger "yellow engines" are designed, built and job-tested with the same exhaustive thought and care that have enabled thousands of their older family members to run up records of forty, fifty and even seventy thousand hours of dependable operation. They have the same ruggedness, the same efficient fuel system and fuel economy, the same high all-round quality that have made "Caterpillar" Diesels world famous for low lifetime cost-per-hour.

When you need a bigger or more powerful shovel, dredge, ditcher, crusher, asphalt plant, or other piece of heavy power equipment, specify these bigger yellow "Caterpillar" Diesels. Let your "Caterpillar" dealer give you full information on these new engines. He is as near as your telephone.

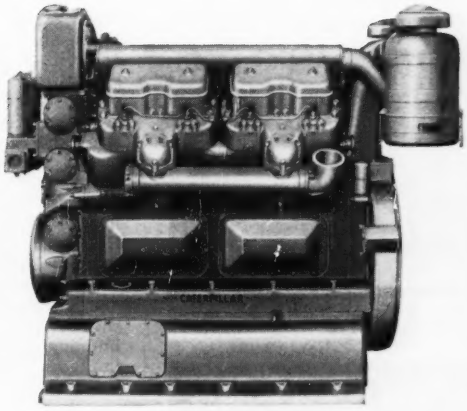
CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS



BIGGER YELLOW ENGINES ...FOR YOUR LARGER JOBS



"CATERPILLAR" DIESEL D375 ENGINE—335 hp. (max.) at 1200 rpm. V-8—5¾" bore x 8" stroke. Equipped with blower.



"CATERPILLAR" DIESEL D364 ENGINE—265 hp. (max.) at 1200 rpm. V-8—5¾" bore x 8" stroke.

CATERPILLAR DIESEL

REG. U. S. PAT. OFF.

ENGINES
TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

TWO NEW STRONG MEN FOR HEAVY HAULING

Built with still more guts than our Standard Model SELF-LOADING FLOAT, which is rated as 50,000 lbs. and regularly walks off with much more, these new, huskier models are rated at

75,000 LBS. - 100,000 LBS.

They are built to stand any test your common sense puts them to. You'll want to know more about these new huskies, built as only Hobbs builds Trailers.

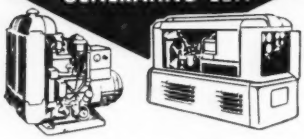
Write, wire, phone for details.

HOBBS MFG. CO.

Fort Worth, Texas, Dept. M

Sales and Service at Houston, Lubbock, San Antonio, Dallas Fort Worth

Meet power failure promptly with a FAIRBANKS-MORSE GENERATING SET!



Dependable Fairbanks-Morse generating sets start to work *automatically*, the instant power supply from regular services is stopped. This is one reason why you'll find Fairbanks-Morse generators are standard equipment in many stores, office buildings, apartments, industrial plants, municipal buildings, hospitals, institutions, theaters, police and fire stations, and on farms.

There is a generating set in the Fairbanks-Morse line for every need, from 350 to 35,000 watts capacities—A.C., or D.C. For full information, see your Fairbanks-Morse dealer or mail the coupon.

FAIRBANKS-MORSE

Fairbanks, Morse & Co.
600 S. Michigan Ave., Chicago 5, Illinois

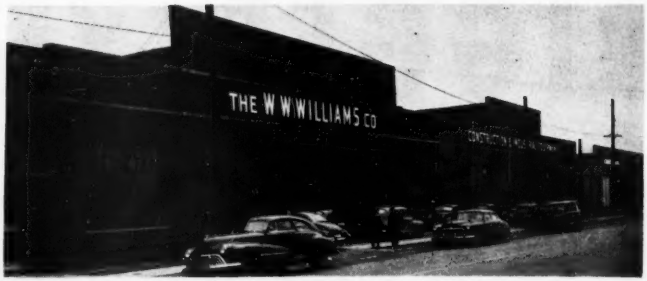
Gentlemen: Please send complete information about generating sets for standby service.

Firm Name.....

Address.....*RD*.....

City.....*State*.....

SJ-4



HEADQUARTERS for both new sales and for rebuilding used equipment, are in Columbus, Ohio. Branch sales and service shop is located at Cleveland, and one is being built at Toledo.

(Continued from page 75)

repair organization are J. C. Williams, president; W. W. Williams, Jr., vice-president and General manager; W. C. McWilliams, sales manager; I. S. Jones, service manager; Ray Stevenson, parts manager; and R. A. Fulton, Cleveland branch manager.

Sales activities are confined to Ohio, and features three principal lines of equipment: International Harvester industrial trucks and tractors; Euclid loaders and trucks; and Koehring, Manitowoc, Unit, and Austin-Western cranes and shovels. Equipment repair and rebuilding covers a larger area, a limited amount having been done last year for the Corps of Engineers.

Specialized Field Servicemen—The three traveling field servicemen play important roles in Williams' program of maintaining good customer relationships. Each is a specialist in his particular line—trucks, earthmoving equipment or shovels and cranes. They travel in ¾-ton International service trucks equipped with small tools needed for the adjustment of the particular lines of equipment serviced.

These field servicemen follow up all new and rebuilt equipment at the end of 30, 60 and 90 days after it leaves the shop or warehouse. In the case of new equipment, they also supervise unloading at the job, tuning up and instruction of the contractor on proper lubrication, maintenance and operation. No charges are made to the contractor for this service.

Reports on these service calls are made out in quadruplet, and signed by the contractor. One copy goes to the manufacturer in the case of new equipment, one to the shop superintendent, one to the sales manager, and one is retained by the field serviceman.

FIELD ADJUSTMENTS on both new and rebuilt equipment are made at intervals of 30, 60 and 90 days after it leaves shop or warehouse, by three servicemen traveling in ¾-ton International trucks. Servicemen WILLIAM JOCEWICZ (in duster) and I. S. JONES, service manager, cheerfully oblige for quick photo.

Nothing Too Big or Too Little—No piece of equipment is considered too large or too small for overhauling, by the W. W. Williams Co. Smallest unit repaired recently is a one-man chain saw, while the biggest includes such units as a 2½-yd. Manitowoc 3500 shovel, a 2½-yd. Koehring 304 shovel, an International Harvester TD-24 tractor, or a 25 FDT-58W bottom dump Euclid. One shipment received last year contained 13 railroad cars each carrying a Euclid 9FDT tractor for complete overhaul and repair.

THEW-LORAIN 50th ANNIVERSARY 1899 1949

Grand Slam

in bridge building with TL-20 CRANEPOWER

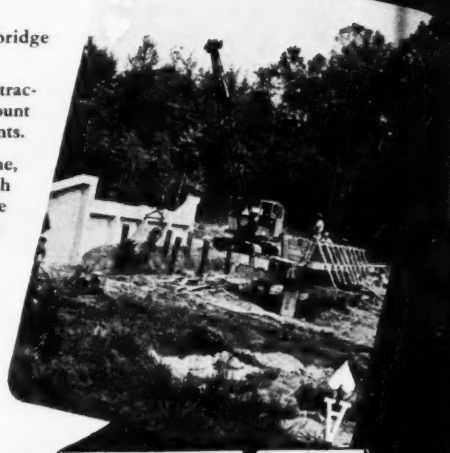
Goodwyn & Murphree, Troy, Alabama, own 4 Lorains . . . "trump" construction costs on bridge job with 1 Lorain TL-20 Crane

Here's how Goodwyn & Murphree made a "Grand Slam contract" on a bridge building job near Red Bay, Alabama.

Leading with a TL-20, one of four company-owned Lorains, the contractors "finessed" every operation and "trumped" construction costs on every count with this power-packed, versatile machine and its various crane attachments.

Tricks taken by the TL-20 as shown by the photos—top left: TL-20 crane, equipped with 1250 lb. drop hammer, drives 75 ten-inch piles to 10 ft. depth in 10 hr. day for two cofferdams below water level. Top right: Swinging the concrete mixer into place. Center: Pouring concrete into forms. Bottom right: Working as a dragline to dig foundation for a concrete form.

This is one of hundreds of construction jobs where the TL-20 is taking extra tricks in production with its labor-saving selection of boom equipment and choice of either crawler or rubber-tire mountings. For this peppy, multi-purpose machine provides over 50 possible combinations to fit your job conditions . . . a full "deck of aces" for a profitable operation. Let your Thew-Lorain Distributor deal you all the facts on this money-making machine—today!



THE THEW SHOVEL CO.
LORAIN, OHIO
Cable Address: UNLOADER

Lorain®

Thew Lorain TL 20

Athey MobiLoader
CUTS LOADING COSTS 50%

INCREASES PIT PRODUCTION 50%
— FOR MAY GRAVEL CORP., FT. WAYNE, INDIANA

The high-production "shuttle-cycle" of the Athey ML4 MobiLoader proves itself with dramatic results, in the May Gravel Corp. pit, Ft. Wayne, Indiana. This MobiLoader, with 1¼-yard capacity wide bucket, makes 3 passes per minute; loads 5- and 6-yard trucks in less than 2 minutes!

And the fast-moving Caterpillar D4 Tractor scoots from spot to spot in the ¼-mile diameter pit — to load bank sand, bank gravel or crushed stone, as desired. The firm has boosted its annual output of aggregates from 100,000 to 150,000 cubic yards.

"With the MobiLoader, we cut costs more than 50%, and increased production," states President William May. "We have saved again as much by eliminating truck-waiting. This machine will pay for itself in 6 to 8 months . . . has done what was expected of it."

The long-track D4 plus the MobiLoader's "track-center balance point" gives ample soft-spot flotation — assures traction for full-bucket loading . . . Ask your Athey-Caterpillar dealer all about the Athey MobiLoader.

Athey APCOR Products

ATHEY PRODUCTS CORPORATION, CHICAGO 38, ILLINOIS

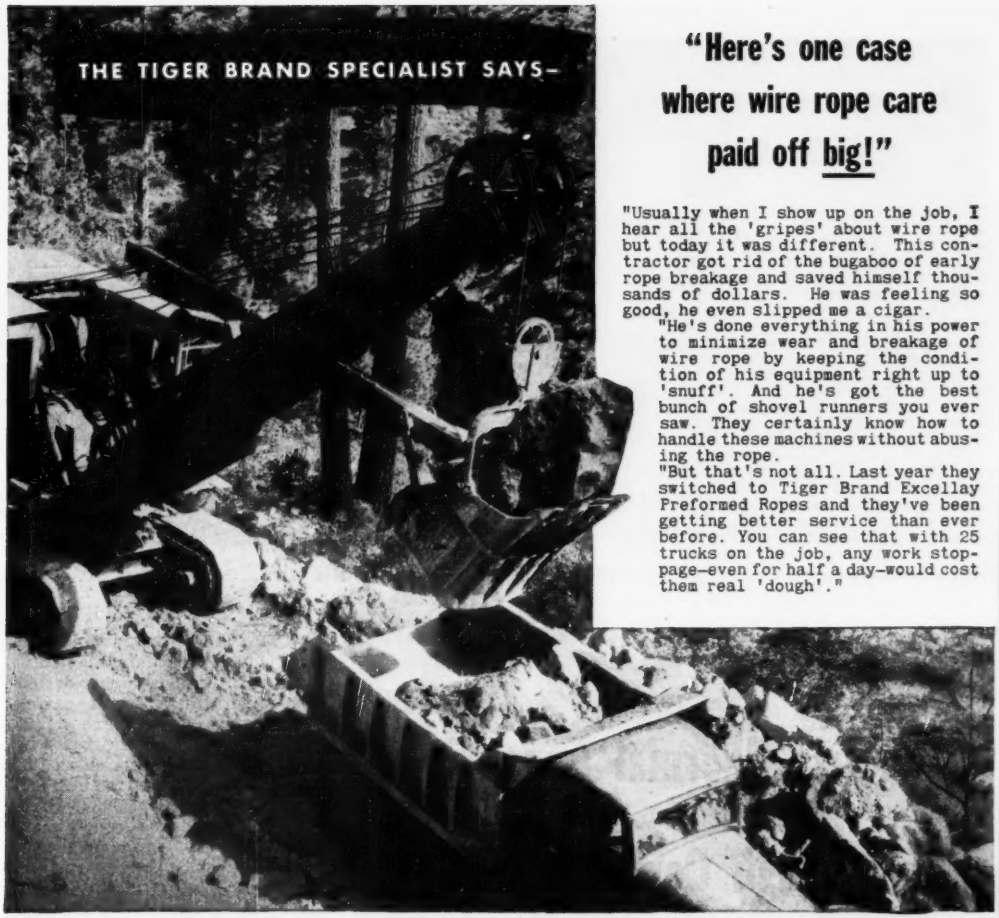
Athey MOBILOADER

Surveying by Radio

CARRYING his own private telephone exchange, this transit man aligns his rodman without even raising his voice. With Walkie Talkie rodman can be aligned without even seeing transit man when shot is taken over a hill. These units have become standard survey party equipment for the Adams Electrical cooperative in Adams County, Ill.

A FAR CRY from the wartime beach-heads where they first gained fame, walkie talkies have now moved into the civil engineering field. By eliminating yelling and arm signalling between instrument men and rodmen, with walkie talkies, survey crews of the Adams Electrical cooperative, Quincy, Ill., are speeding up their field work from 30 to 50 percent. Equipped with shoulder straps and a cradle-type phone receiver, the modern, 7-lb. Motorola units facilitate easy signalling while leaving one hand free for the instrument. With walkie talkies, rodman can be aligned without being in sight of transit man, so long as top of rod can be seen. Two portable units will carry distances of from two to three miles.

Line trucks, also equipped with Motorola portable units, can communicate with persons on foot when storms necessitate such patrols on private rights-of-way. Installation of walkie talkies in planes for patrolling lines after severe storms is contemplated.



"Here's one case where wire rope care paid off big!"

"Usually when I show up on the job, I hear all the 'gripes' about wire rope but today it was different. This contractor got rid of the bugaboo of early rope breakage and saved himself thousands of dollars. He was feeling so good, he even slipped me a cigar.

"He's done everything in his power to minimize wear and breakage of wire rope by keeping the condition of his equipment right up to 'snuff'. And he's got the best bunch of shovel runners you ever saw. They certainly know how to handle these machines without abusing the rope.

"But that's not all. Last year they switched to Tiger Brand Excellay Preformed Ropes and they've been getting better service than ever before. You can see that with 25 trucks on the job, any work stoppage–even for half a day–would cost them real 'dough'."

How proper wire rope application saves you money

There is always one best type of wire rope for every application and the TIGER BRAND Wire Rope Specialist can help you select the right ropes for your particular needs. He'll check your equipment, keep you posted on proper rope care, and a dozen other things to assure long service life at low unit cost.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information. Send the handy coupon for your copy.

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Gentlemen:

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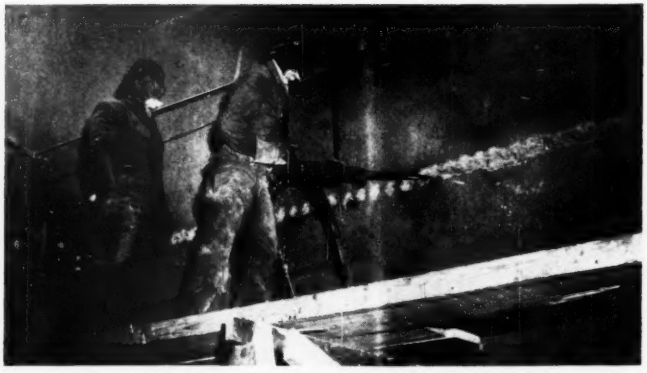
UNITED STATES STEEL

Fifty-two openings are cut through 22-in. reinforced walls as . . .

Electric Thermal Expansion Aids Tough Concrete Drilling

CUTTING OPENINGS in old concrete walls is noisy but seldom difficult with today's high-powered pneumatic drills, chippers, paving breakers and burning torches, plus a new idea in cracking walls by electric thermal expansion. But when the walls are 22 in. thick and heavily reinforced each way in both faces, the task grows more difficult. And, when the number of such openings totals 52, varying in size from 10½x16 ft. to 10½x36½, none but the hardiest of construction men would think of tackling the job. Wall sections weigh from 23 to 46 tons each.

Such is the case, however, in



FIRST STEP in cutting an opening is to drill a continuous line of 2-in. holes at 3-in. centers completely through 22-in. wall, extending up sides (at left) and across top of opening (at right). Two 2-man crews with Cleveland Pneumatic hand drills and chippers powered by two 210-cfm. Davey compressors, together with one man burning reinforcing steel, cut a 16x10½-ft. opening in 40 man-hours.

Cleveland, Ohio, where the Cleveland Transit System is converting a windowless war plant into a modern bus maintenance and storage garage.

The job involves cutting 20 doorways in one exterior wall for bus entrances. Once inside, 32 more openings have to be cut through the walls of a series of bins used during the war for storing sand needed in making castings.

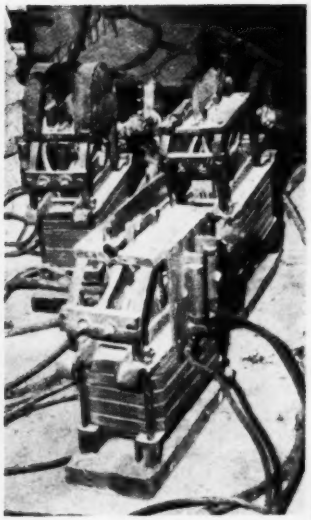
A few openings were cut by contract, but in order to speed up the remodeling, most of the openings are being made by the transit system's own forces.

Neat System Worked Out

By applying certain laws of physics, a neat system was worked out by E. B. Spenzer, assistant superintendent of way, which is fast in progress but noisy in execution.

Cutting the openings is a tough job in itself, since the heaviest interior walls are 22 in. thick reinforced in both faces with 1½-in-sq. bars spaced 6 in. horizontally and 12-in. vertically. But the real problem is to separate the big 10½x16-ft., 23-ton wall sections into two halves small enough to be dragged away by a power shovel.

To break a slab in two, a plane of rupture is first established vertically, at its center by expanding one of the vertical reinforcing rods sufficiently to crack the 2-in. covering of concrete. When the huge concrete wall is pulled over on to three 12x12-in. timbers, it falls on a 6x6 placed on top of the center timber. The impact of this fall opens the crack in the wall from top to bottom. Final separation then is merely a matter of burning the horizontal reinforcing bars that extend across the plane of rupture, and completing the break with pneumatic chippers.



ELECTRIC CURRENT at 6,000 amp. and 15 v. is passed through vertical 1¼-in. reinforcing bar embedded in the wall (left), to establish a crack at the center of the 16-ft. opening. Dark stain is water entrapped in the 6-yr.-old concrete, being boiled out under the terrific heat. Juice for heating the rod comes from three old transformers (right) used many years ago to braze street car rails together.

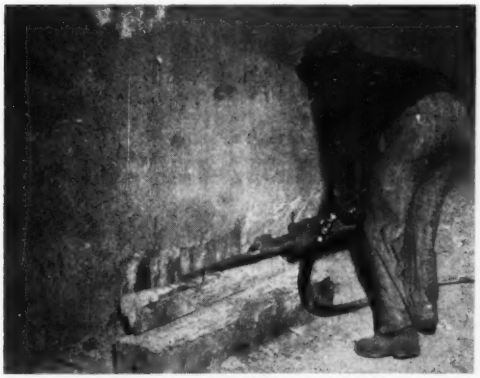
Formerly it took 12 man-hours to separate each wall section, but by using electric current this was reduced to 1½ man-hours.

As shown in the accompanying sequence of photos, the wall openings are made as follows:

First step is to drill a row of 2-in. holes at 3-in. centers completely through the wall and to extend the sides up and across the top of the opening to be made. Pneumatic chippers complete the cut, exposing the reinforcing bars which are burned in two. Chippers also expose the vertical bars passing through a construction joint at the junction of wall and floor slab. It takes 40 man-hours of work to do this drilling, chipping and burning.

At this point, 6,000 amp. of electricity is passed through the verti-

(Continued on page 86)



VERTICAL BARS in rear face of wall are exposed with Cleveland Pneumatic chipper so burner can get at them.

VERTICAL AND HORIZONTAL BARS are burned with oxyacetylene torch, completely around the 16x10½-ft. opening. All that's left to do now is to pull over 23-ton block of concrete.

2 TOURNAROCKERS

"These jobs will outpull anything I ever saw."

says RALPH PRICE of NICHOLAS DEVELOPMENT CO., INC.

STRIPPING approximately 750,000 yards of blasted rock and mixed earth for Babcock Coal and Coke at Babcock State Park, Nicholas Development Company, Inc., of Beckley, West Virginia, have found Tournarockers their most effective hauling equipment.

They have been using two of these revolutionary new LeTourneau 16-ton rock buggies for the past year to haul from a 2½-yard stripping shovel.

Average load every 4 minutes, 500' haul

Tournarockers are loaded with 6 passes from the well-heaped 2½-yard dipper . . . carry 14 bank yards. Checked on 500-foot, one-way haul, each rig averaged a round trip every four minutes including load, haul, dump and return. Road is average for strip-pit operation, slight favorable grade.

So fast was the haul cycle, that one of the two big-capacity Tournarockers was under the shovel at all times. Operation of the shovel was speeded up because big target area, measuring 11'2" x 7'10", plus the low body position of the Tournarocker, saved time each swing. Six dippers to a load also made for a faster shovel operation. There was also less spill than usual. The Tournarockers moved away from shovel faster than any equipment previously used by Hawkins and Price, owners of Nicholas Development Company, Inc. These haulers were off and away the instant the last pass was completed . . . took only seconds from a standing start to get rolling fast in 3rd gear.

Faster, cleaner on dump

On the dump, these versatile off-road hauling units also showed a lot of speed advantages. They backed into position quickly — saved time by eliminating usual turning and maneuvering. Because of front wheel drive and Tournarocker design, rear wheels could be backed onto the unstable fill edge, dump-

Send for Complete Facts

To: R. G. LeTOURNEAU, Inc., PEORIA, ILL. Please send information on E16 Tournarocker.

☐ Specifications ☐ Price ☐ Delivery ☐ Would like job analysis on present operations

NAME TITLE

COMPANY TYPE OF BUSINESS

STREET CITY, STATE

Would also like information on TOURNAPULLS: ☐ 7-yard "D" ☐ 13.3-yard "C" ☐ Big 30-yard "B"

speed coal stripping at West Virginia mine

ing the load over the bank . . . practically eliminating need for dozer work on the dump.

Powerful brakes with 4,108 square inches of braking surface . . . *more on one wheel than most haulers have on the whole vehicle* . . . made this kind of handling safe. Big tires and front-wheel drive made it easy to pull back on top. Push-button steer gave quick maneuvering, and instant gear selection got the Tournarockers under way at top speed fast. The vertical dump position and wide clean lines of the body, cleared loads fast; and even when wet, no material remained in bowl.

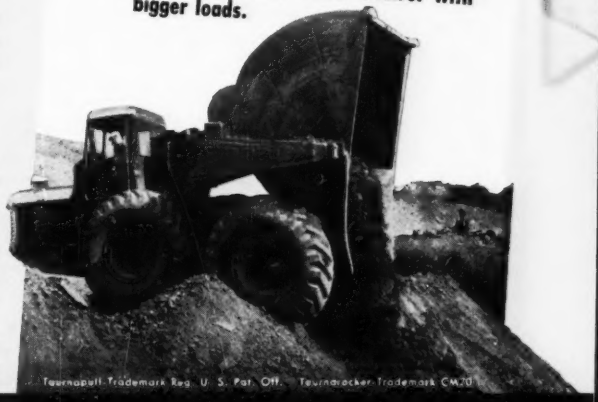
Cuts weather delays

Ralph Price, one of the owners, and in charge of stripping operation on Sewell Mountain, says that the Tournarockers have been a big help in maintaining practically continuous operation all summer and fall in spite of rainy weather that would normally close jobs with other type haulers. "They go through where others hang up," was the way he explained it.

You, too, can profitably cut your haul costs and increase your profits with Tournarockers . . . why not get an analysis from your LeTourneau Distributor . . . NOW!

Nicholas Development Co., Inc. like TOURNAROCKERS because:

1. **BIG TARGET** and low rear-entry for dipper gives fast loading.
2. **TOURNAMATIC DIFFERENTIAL** delivers more operating days during rainy weather.
3. **SHORT TURN RADIUS** permits close approach to bank, quick spot.
4. **LOADS DUMP CLEAR** . . . Tournarockers put rear wheels safely over bank . . . pull out easily with drive wheels always on the firm footing . . . most dump clean-up is eliminated.
5. **ELECTRIC STEER**, and safe, sure control at all times, eliminate severe operator fatigue common on other haulers.
6. **GIANT TIRES**, power-proportioning differential, and power steer, materially cut weather delays.
7. **4108 SQ. IN. BRAKE SURFACE** mean sure, safe stops, better control with bigger loads.



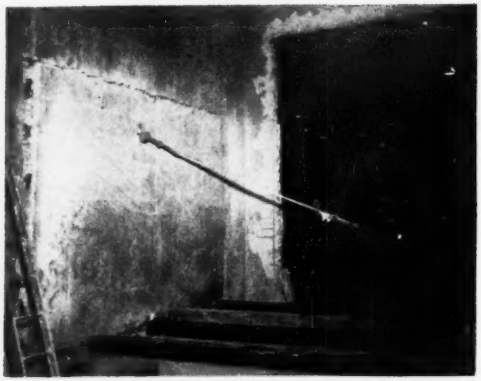
Tournapull-Trademark Reg. U. S. Pat. Off. Tournarocker-Trademark CM20

LETOURNEAU TOURNAROCKERS

PEORIA, ILLINOIS

HIGH SPEED on RUBBER PLUS TRACTION ADVANTAGES of a CRAWLER

LONG TIMBER STRUT and 20-ton jack, break bond between wall and floor. Fortunately this was construction joint in old war plant.



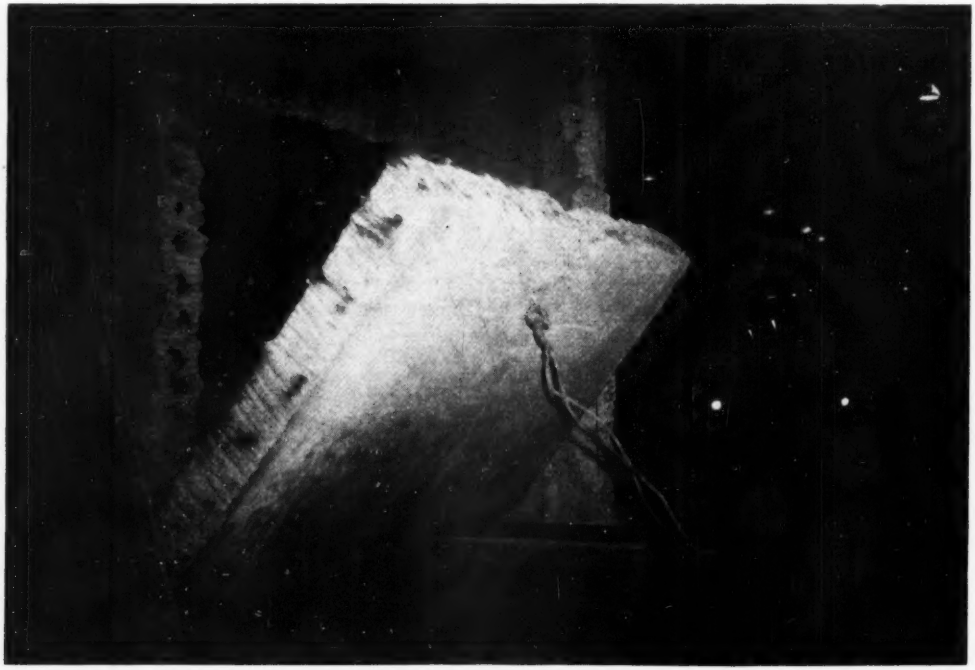
WALL STARTS TO MOVE under hefty strain of ¾-in. cable attached to eye-bolt inserted near top of wall and running to truck winch. Winch had just slacked-off when this photo was taken; hence, slight sag in cable.

(Continued from page 83)

cal reinforcing bar at the center of the section of wall to be removed. As the bar expands under this terrific heat, it cracks the 2-in. covering of concrete. It also boils out excess water that has been entrapped in the 6-year-old concrete.

This procedure is repeated on the other side of the wall to insure a well defined, and controlled plane of rupture as the wall is pulled over. Electricity is supplied by a series of three old transformers, used years ago to braze street car rails together. The current is left on for about 20 min., heating the rod to just below its melting point.

The wall is then pulled over by a winch line from a tow truck run-



OVER SHE GOES, and everybody stand clear! The 6x6 placed on top of center 12x12-in. timber opens up big block of concrete down its middle, at crack developed by application of electric current.

CHIPPER AND BURNER make short work of separating fallen wall into two 8x10½-ft. blocks, small enough to be dragged away by power shovel. Top reinforcing bars are burned in two with oxyacetylene torch (left), while bottom bars are burned with an oxygen lance (right).

ning to an eye-bolt anchored near the top of the wall. A timber strut and 20-ton jack, on the rear of the wall, breaks the bond of concrete between wall and floor, and helps start the wall over.

As the section of wall hits the 6x6 placed on the center 12x12-in. timber, it cracks in two neatly on the previously established plane of rupture.

Separating the two sections takes less than 30 min., using an

(Continued on page 89)

TWENTY BIG OPENINGS were drilled through one exterior wall to make doorways for buses entering remodeled plant.

WHAT USED TO BE an intersection of three walls is now a T-shaped column, formed by cutting three adjacent openings.

ENGINEERS IN CHARGE of the work for the Cleveland Transit System are (l. to r.): R. McINTOSH, assistant superintendent of power; E. B. SPENZER, assistant superintendent of way; W. F. AID, superintendent of way; C. E. JACKSON, chief clerk; R. B. SMITH, track superintendent; and MR. CROYLE.

EXAMINING WORK ARE: R. H. CROYLE, foreman in charge of remodeling (right) and his son DONALD, engineering aid, for Cleveland Transit System.

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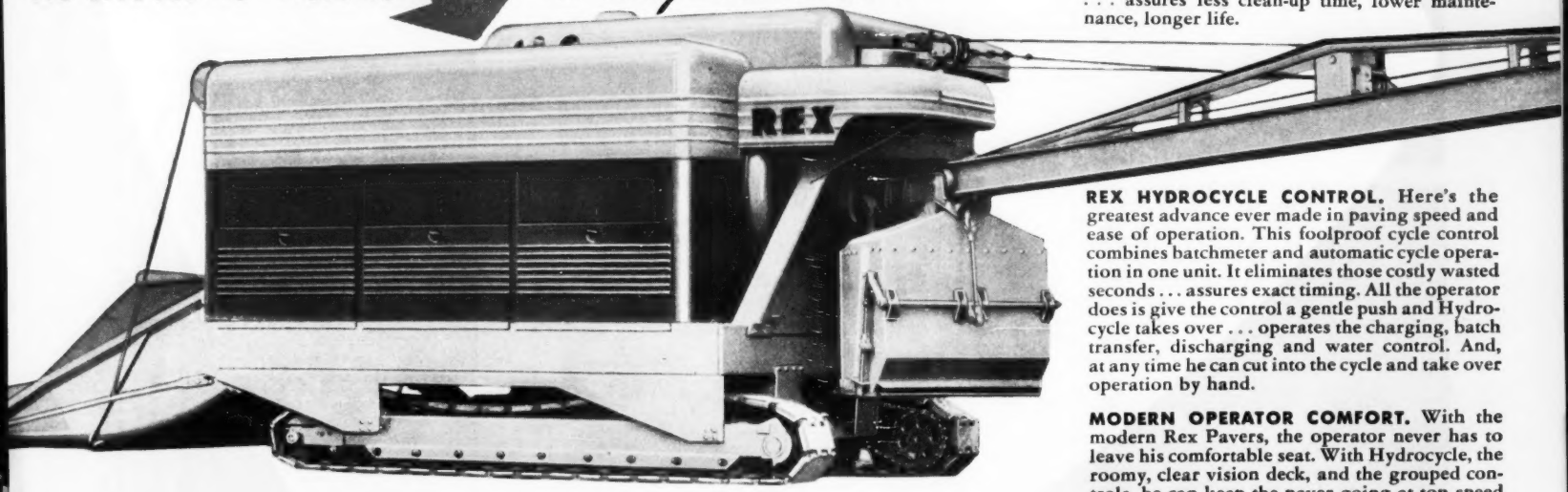
as modern inside as they are out!

• Before you spend your money for a paver for the big road program ahead, check the only basically modern pavers in the industry. Rex Pavers are modern *inside and out* . . . from the ground up . . . field-tested and proved by 5 years of actual experience in the roughest, toughest kind of high speed production. Just look over the modern advantages Rex will give you:

REX ACCESSIBILITY. The modern streamlined shielding makes these the most accessible pavers you've ever seen. Big, easy-opening doors permit quick access for lubrication and inspection. And streamlining keeps dirt off the working parts . . . assures less clean-up time, lower maintenance, longer life.



REX HYDROCYCLE CONTROL. Here's the greatest advance ever made in paving speed and ease of operation. This foolproof cycle control combines batchmeter and automatic cycle operation in one unit. It eliminates those costly wasted seconds . . . assures exact timing. All the operator does is give the control a gentle push and Hydrocycle takes over . . . operates the charging, batch transfer, discharging and water control. And, at any time he can cut into the cycle and take over operation by hand.

MODERN OPERATOR COMFORT. With the modern Rex Pavers, the operator never has to leave his comfortable seat. With Hydrocycle, the roomy, clear vision deck, and the grouped controls, he can keep the paver going at top speed all day long with far less effort.

AND MODERN simplicity of design, rugged construction, modern ease of spreading, husky crawlers . . . there's a whole host of features it will pay you to check. For all the facts, see your Rex Distributor or write Chain Belt Company, 1664 W. Bruce St., Milwaukee 4, Wis.

● 34E SINGLE AND DOUBLE DRUM PAVERS

CHAIN BELT COMPANY REX CONSTRUCTION MACHINERY

(Continued from page 87)

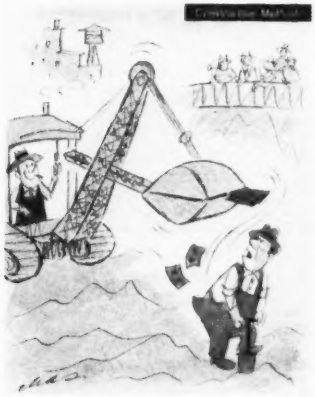
oxyacetylene torch for burning the top steel, an oxygen lance for the bottom steel and a concrete chipper to complete the cut.

Big holes also were cut in some areas of the floor to permit installation of greasing pits for the buses. But this was just a straight job of drilling, chipping and burning. Sections of floor slab removed were dropped into the basement of the sand bins and covered with dirt up to the bottom of the greasing pits.

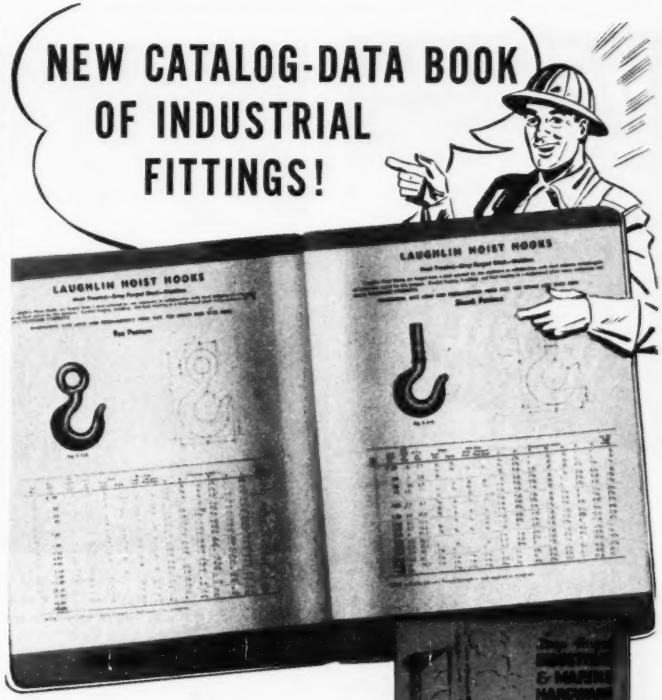
Plans for remodeling the old war plant into a modern bus terminal, named the Reed garage in honor of William Reed, chairman of the Cleveland Transit System, were prepared by the Osborn Engineering Co., Cleveland. Others connected with the work are those shown in the accompanying group photo, and M. W. Rew, superintendent of engineering and power.

WANT TO SEE YOUR NAME AND PICTURE IN PRINT?

GET IN on the monthly CONSTRUCTION METHODS prize picture contest. Send us your interesting shots of construction operations and qualify for three cash prizes—$25—$15—$10 each month. Non-prize winning pictures may bring you $5 each if published. See the announcement on page 37 of this issue.



"Next time you want to borrow a few bucks, just come right out and ask me."



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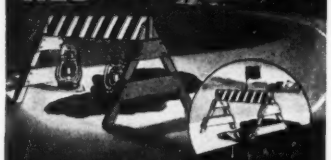
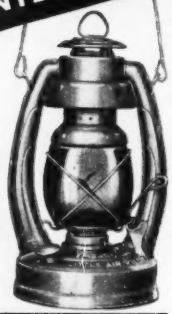


EMBURY
AIR PILOT
LANTERN



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All widths lengths, and thicknesses. Punched ready to fit your machine.

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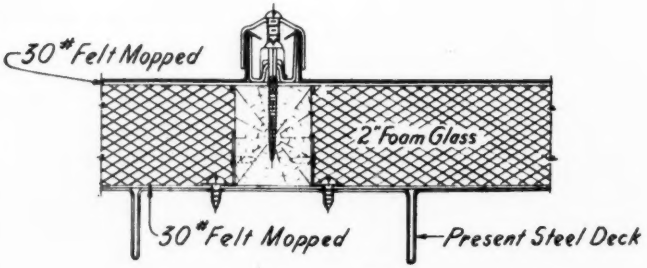
Shunk
Member of A.M.T.
MANUFACTURING COMPANY
Established 1854
BUCYRUS, OHIO.

WITH ITS SHINY new Goodwin-Batten Type aluminum roof, 22-year-old University of Minnesota field house stands out like a sore thumb. Job was done by Overly Manufacturing Company, Greensburg, Pa., in less than two months and consumed 85,000 lb. of aluminum.

New Roof Dehumidifies College Field House

IN ADDITION to satisfying the usual waterproofing, dead load, and durability requirements, contractors had to cope with high humidities generated by large crowds (up to 20,000), when re-roofing the 440x236-ft. University of Minnesota field house in Minneapolis recently. It was an insulation problem. During athletic events clouds, formed within the building by high humidity, had condensed on the ceiling and dripped on both spectators and on the floor. Often sports had to be halted while the water was removed from playing



Section "A-A"
Full Size Section Thru Standard Batten

CROSS-SECTION OF ROOF shows how aluminum battens, roofing panels (black), and cover strips go together. Batten is screwed to wood nailer. Specially formed panel edges hook over batten and are secured by cover strip screwed to panel.

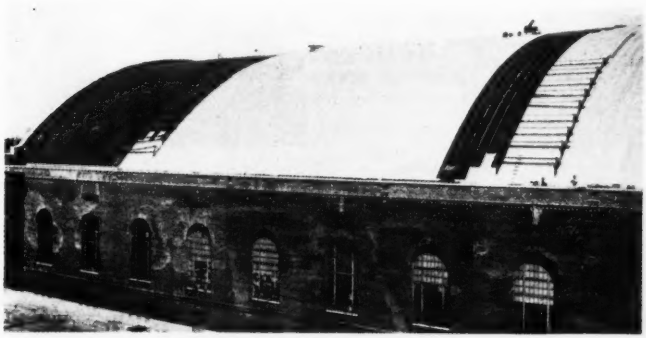
WORKING from simple bleacher-like scaffolding, men put down 4,100 39x120-in. precurved aluminum roofing panels on 22-year-old building.

area. Overly Manufacturing Co., Greensburg, Pa., and the Aluminum Company of America, Pittsburgh, Pa., eliminated this difficulty by capping the 22-year-old athletic arena with 14,800 sq.yd. of their special Goodwin Batten-Type aluminum roofing. A 2-in. layer of foamglass insulation stops the clouding and asphalt-felt vapor barriers protect insulation from moisture which would lower its efficiency.

Since the job had to be done while the field house was in continual use, old roofing and insulation were removed in progressive stages and new roofing was applied immediately, allowing a minimum of exposure to the elements. After the steel deck was repaired and cleaned, a vapor seal of 15- and 30-lb. asphalt felt was put down, spot-mopped, and sealed with steep asphalt. Vertical and horizontal 1⅝x2-in. treated wood nailers were next secured to the steel deck with clips and metal screws. Then came the 2-in. layer of foamglass followed by a seal of 30-lb. asphalt impregnated asbestos felt, applied with hot asphalt.

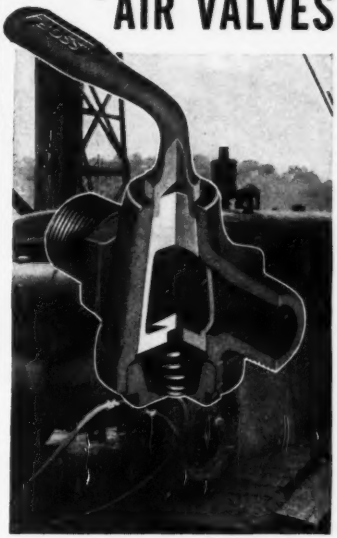
Preparatory steps completed, battens formed with screwing ridges were secured to vertical

(Continued on page 92)



COMING INTO HOME STRETCH on big job, panels are going down in two different locations. Light strips are extruded aluminum battens to which formed roof panels are attached. Battens are screwed to treated 1⅝x2-in. wooden nailers.

"BOSS"
Self-Honing
AIR VALVES



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CONCRETE FORMS

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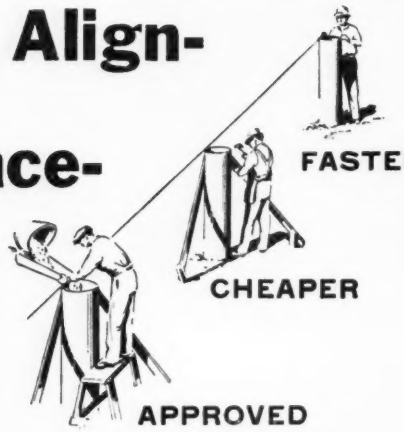
Brace- FASTER

Pour- CHEAPER



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WRITE FOR DELIVERED PRICES

SONOCO PRODUCTS COMPANY

BRANTFORD ONT. HARTSVILLE S. C. MYSTIC CONN.

(Continued from page 91)

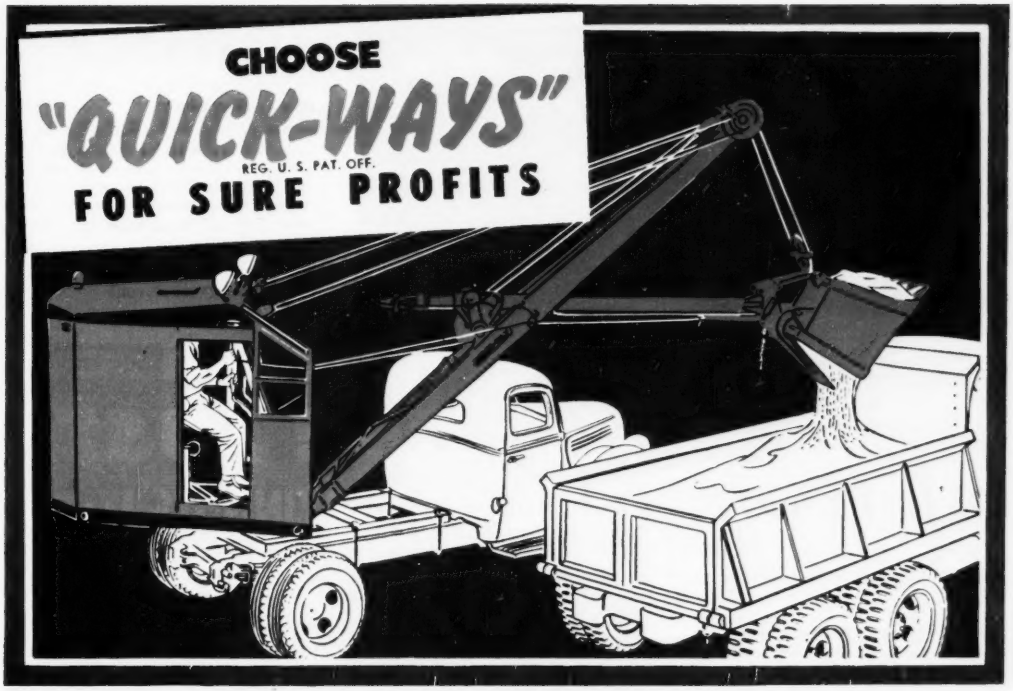
wood nailer strips by aluminum screws on 20-in. centers. To these were fastened the preformed edges of 20-gauge aluminum panels (see diagram). Joints were then completed with extruded aluminum cover caps fastened to batten ridges with aluminum screws, forming an effective weather-tight seal. These joints also compensate for thermal expansion and contraction of roof panels within prevailing temperature ranges, preventing buckling.

A material breakdown for the job shows 85,000 lb. of aluminum including 40,000 lin. ft. of both extruded battens and batten covers, 4,100 39x120-in. roof panels, and 16,000 aluminum nails. All but the nails were formed and precurved at Overly's Greensburg (Pa.) plant to fit the roof arc.

Dump Trucks Adapted to Bulk Cement Haulage

FOR HAULING AND PLACING AIR-ENTRAINED CONCRETE from central mixing plant at Medicine Creek Dam, Cambridge, Neb., C. F. Lytle and Amis Construction Co., general contractors, use three 4-yd. Dumpcretes. On body of one of these units, illustrated herewith, a steel cover equipped with loading door was added to adapt Dumpcrete to haulage of bulk cement from railroad to mixing plant, a 9-mi. distance. Forty-barrel loads of bulk cement were thus handled by inclosed body without loss of material in transit.

CHOOSE "QUICK-WAYS" REG. U. S. PAT. OFF. FOR SURE PROFITS



PORTABILITY AND CAPACITY . . . these are the fundamentals you KNOW you want in a truck shovel. You get PORTABILITY in a "QUICK-WAY" because it is built of steel for lightness and strength, no heavy counter-weights to slow you down. You get CAPACITY because balance and stability are designed into your "QUICK-WAY".

In addition you get SPEED . . . PERFORMANCE . . . VERSATILITY . . . INTERCHANGEABILITY . . . SIMPLICITY . . . ECONOMY OF OPERATION . . . LOW FIRST COST . . . LOW MAINTENANCE . . . and EXTRA PROFITS.

A "QUICK-WAY" mounts on ANY standard truck of proper size to go anywhere a truck can go at truck speed. A "QUICK-WAY" is CONVERTIBLE IN MINUTES from Shovel to CRANE, DRAGLINE, CLAM-SHELL, PILE DRIVER, SCOOP, TRENCH-HOE or BACK FILLER. You buy only the attachments you want. A "QUICK-WAY" is simply built, with many interchangeable parts, all easy to service . . . and durable.

THE FUNDAMENTALS built into every "QUICK-WAY" add up to sure profits on a small investment, with one of the most useful machines you can own.

NO MATTER WHAT OTHER EQUIPMENT YOU OWN, you need "QUICK-WAYS" too. There's a "QUICK-WAY" owner near you; ask HIM.

• Service available from Distributors strategically located throughout U. S. Others worldwide

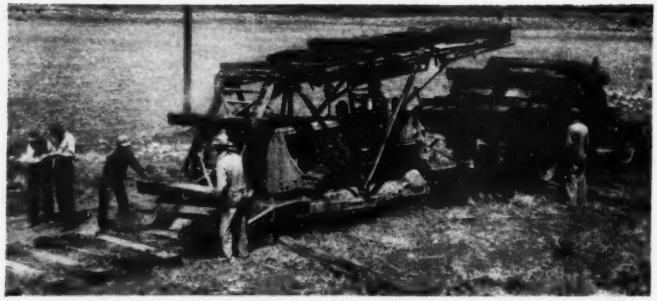
MODEL E: 4/10 cu. yd. cap. for mounting on any standard 5-ton truck.

MODEL J: 1/4 cu. yd. cap. for mounting on any standard 1½-ton truck.

For speed, portability, economy of operation, and adaptability to a wider range of jobs, nothing of comparable size equals a "Quick-Way" Truck Shovel.

"QUICK-WAY" TRUCK SHOVEL CO.

DENVER, COLORADO



Who's pulling who?

Tractor does pulling, scooping up ties on chain hoist and dropping them on truck for hauling. Two men in front reject bad ties, while third sees that they land squarely on truck. Tractor operator completes crew which picks up 1 to 1¼ mi. of ties (2,800 to 3,500) a day.

Chain Hoist Rig Picks 'Em Up and Lays 'Em Down

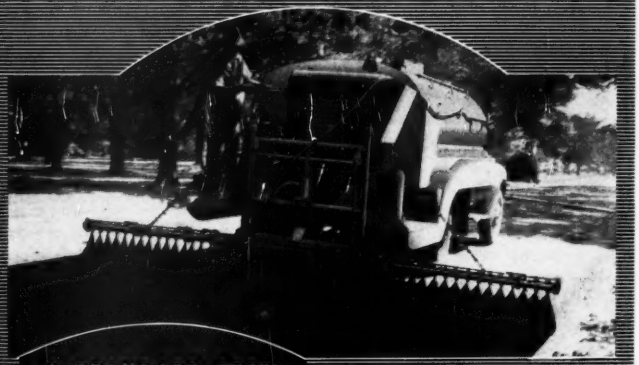
FOR PICKING UP TIES on a branch line of the Denver and Rio Grande R.R. between Moroni and Nephi, Utah, Morrison-Knudsen Co. Inc., general contractors, Boise, Idaho, recently cooked up a classy tractor-mounted continuous tie loader. The specially-designed pipe frame on a Caterpillar D6 shown in the accompanying illustration, supports a chain hoist which picks ties off the ground and drops them into a truck, towed backwards by the tractor. A combustion engine generator mounted on the side of the tractor opposite the driver powers an electric motor at the front of the frame which runs the hoist by chain drive.

With this rig H. M. Emery, foreman for Morrison-Knudsen, picked up 2,800 to 3,500 ties a day.

The boss and his rig

H. M. EMERY, foreman for Morrison-Knudsen Co. Inc., leans on tie-loading D6 Caterpillar tractor with which he cleaned up branch line of Rio Grande between Moroni and Nephi, Utah.

NO TIME LOST!
LOADING OR LAYING ITS LOAD



A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR

STANDARD STEEL
PRESSURE DISTRIBUTOR

The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

WRITE FOR CATALOG 424

OTHER PRODUCTS OF STANDARD STEEL

Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

Built to the Highest Standard PD-1

Standard Steel Works NORTH KANSAS CITY, MO.

"FLEETWELDERS" ELIMINATE ARC BLOW ...increase welding speed 10%

By J. K. GANNETT
Vice President in charge of Engineering and Research,
The Austin Company,
Cleveland, Ohio

J. K. Gannett

The solid, uniform welds required in our heavy structural work are now being made easier and at lower cost with AC arc welding. By eliminating the restrictions of arc blow in the construction of heavy structural weldments like the roof truss shown, our fabricating shop is today able to take full advantage of higher welding currents with resulting substantial increases in welding speeds.

Structural members like the jack truss shown in the photographs are shop fabricated from wide flange beams and from plate. Component members are first positioned accurately for close fit-up and tack welded. One side is then partially welded with fillets of ¼" "Fleetweld 7" electrode using 500-amp. Lincoln "Fleetwelder" AC arc welders.

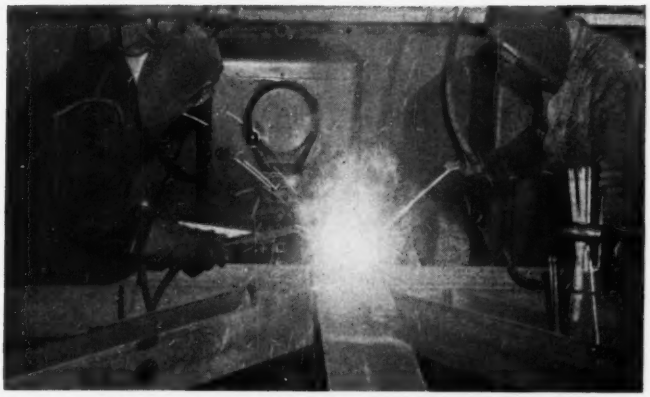


Fig. 1. *Arc welding diagonals to chord with the 500-amp. Lincoln "Fleetwelder" AC welders at the structural fabrication shop of The Austin Company.*

After the initial side welds are made, the truss is placed in an upright position as shown in Fig. 2 and continuous welds completed around each member, framing into the lower chord. The truss is then flopped over and similar welding is done for the members framing into the other chord. This procedure permits us to use fast downhand welding techniques on all connections and assures us solid, high quality welds on all joints at the lowest fabricating cost.

Using the AC "Fleetwelders," thus eliminating arc blow, allows our operators to increase their current to over 300 amperes with no difficulty in maintaining a steady, constant arc at all times. Increased amperage, combined with steady, uninterrupted operation, has cut our welding time about 10%.

Fig. 2. *Fabricating all-welded 40-ft. jack truss for factory building framework. Top and bottom chords are 10"-21WF beams; diagonals are 8"-17WF beams. Welds are downhand, single pass, ⅜" fillets.*

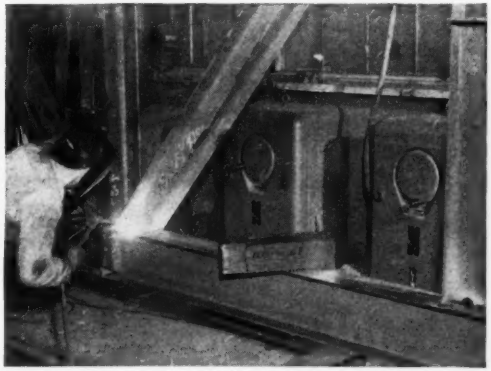


Fig. 3. *Finishing all-around welding of diagonal to bottom chord. Weld is made with single pass ¼" diameter "Fleetweld 7" electrode. Welding current is 310 amps.*

The above is published by **THE LINCOLN ELECTRIC COMPANY** *in the interests of progress.*
For further information on "Fleetwelders," write for Bul. 366. The Lincoln Electric Company, Dept. 173, Cleveland 1, Ohio.
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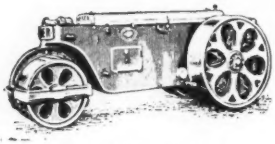
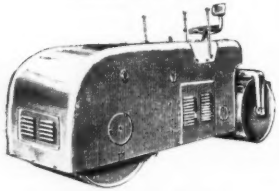


HUBER 3-WHEEL ROLLERS
4 models—5 to 12 tons



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Other Huber road machinery built to make your construction work more profitable includes: 3-wheel automotive type road rollers, tandem rollers and trench rollers. Write today for descriptive bulletins and name of your Huber dealer.

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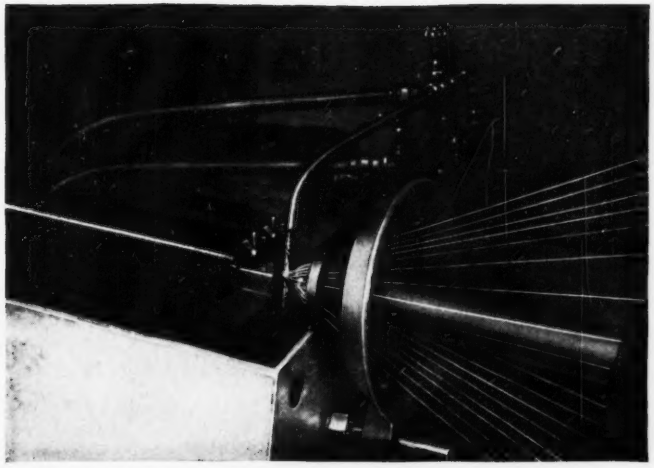

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Field lubrication of wire rope does much to prevent friction and corrosion and should not be neglected. However, it is only a *surface* treatment. To provide proper *internal* lubrication, every strand of Wickwire Rope is actually formed in a stream of hot, quick-setting lubricant which packs the many spaces between the wires of the strand.

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Thorough lubrication is only one step in the quality control of Wickwire Rope manufacture—but we at Wickwire believe that *every* step is important to assure finished rope that will provide the utmost in performance, safety and long life.

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Where frequent reversals are required, such as for shovels or for the main drum in crane service, the planetary provides remarkable flexibility, yet delivers full power as positively as a gear.

P&H originated and patented the application of the planetary transmission on excavators and has always led in its development. Its various uses, explained here and on the following page, constitute another important P&H Added Value.

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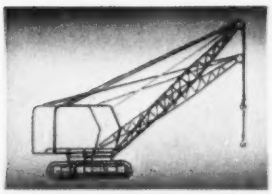
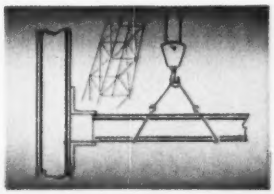
means safer, faster, more accurate load handling

Here's an operating feature you'll find on no other crane—planetary raising of both boom and load, together or independently. It is quick, easy and safe. And with load lowering against engine power, there's greater accuracy for "inching" heavy loads where utmost precision is required.



HERE'S A BIG ADVANTAGE in work such as steel erection. Operator can raise boom and load as machine moves forward, without forward motion of the boom point.



BOOM AND LOAD can be lowered smoothly, steadily, without jerking. This permits more precise handling of heavy members such as in fitting up structural steels.

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EASY OPERATION is provided through simple, positive hydraulic control; more responsive. The operator reacts naturally with direct "feel" of the load at all times.

The P & H planetary transmission is the simplest, most compact mechanism for these Crane functions. There are no exposed gears, no stub shafts, no extra clutches.

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P&H Excavators are built in sizes from ⅜ to 6 cu. yds. with gasoline, Diesel, or electric power. Ask for bulletins on the size that interests you.

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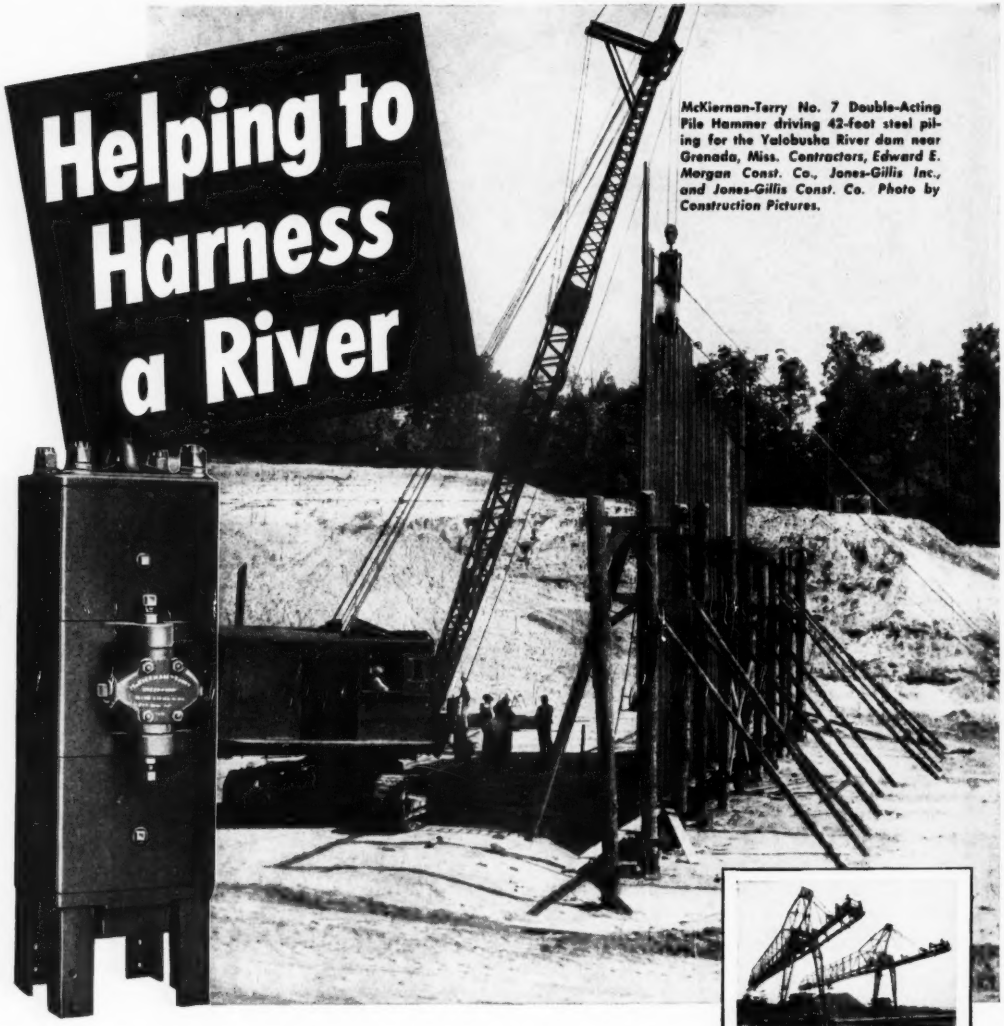
Helping to Harness a River



McKiernan-Terry No. 7 Double-Acting Pile Hammer driving 42-foot steel piling for the Yalobusha River dam near Grenada, Miss. Contractors, Edward E. Morgan Const. Co., Jones-Gillis Inc., and Jones-Gillis Const. Co. Photo by Construction Pictures.

The Grenada Dam, part of a wide flood control plan for the Yazoo River Basin, is an earth dam with a concrete spillway. A McKiernan-Terry Pile Hammer was chosen to drive the necessary steel piling . . . another tribute added to those being constantly paid by contractors to the dependability of McKiernan-Terry Pile-Driving Equipment.

The complete McKiernan-Terry line offers a choice of ten different sizes in Double-Acting Hammers, five Single-Acting sizes and two Double-Acting Pile Extractors . . . a right hammer for any specified job.

WRITE FOR LITERATURE

Specifications and other data on McKiernan-Terry Hammers will be sent you on request—helpful information you should have on file.

ALSO MADE BY McKIERNAN-TERRY

The same engineering and manufacturing skill that has made McKiernan-Terry Pile Hammers so outstanding in the field of construction is applied also to bulk material unloaders, coal and ore bridges, marine equipment, cranes, bridge operating mechanisms and other important machinery of service to industry, railroads and the government.

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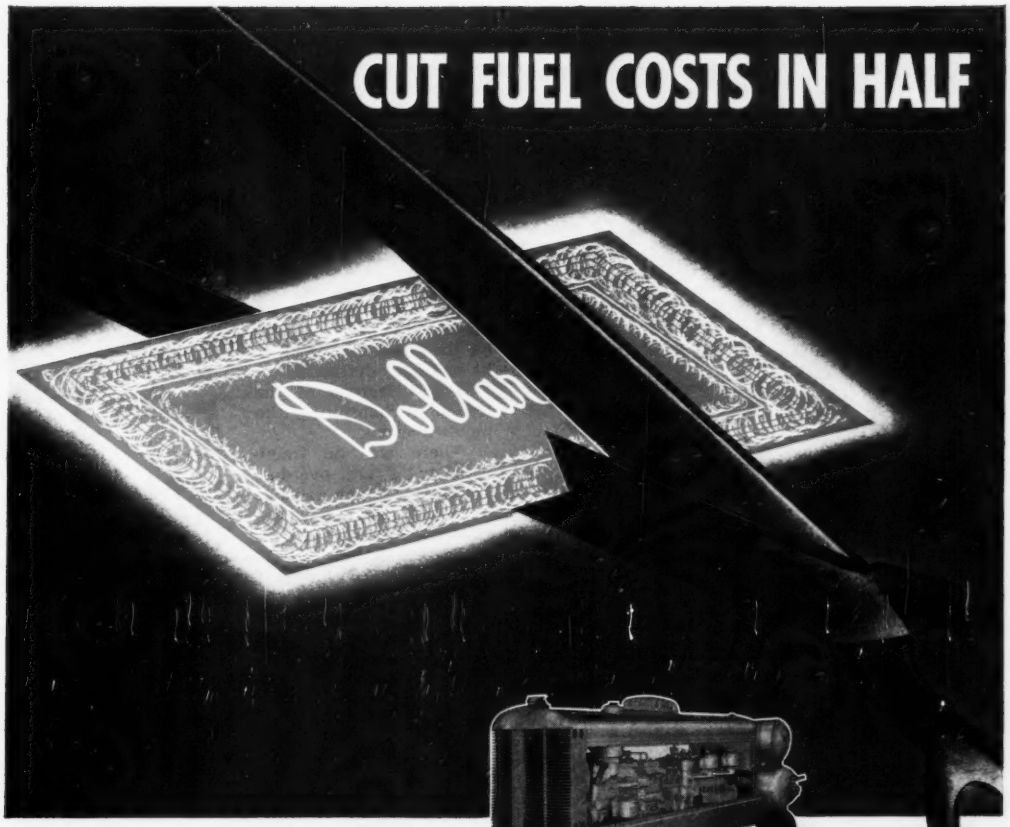
McKiernan-Terry PILE HAMMERS AND EXTRACTORS

CUT FUEL COSTS IN HALF



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YES, this saving is now possible with the new feature of the Schramm Air Compressor . . . the Pneumastat!

The Pneumastat assures you of *infinitely variable speed* and the elimination of continuous loading and unloading. The result is an *even flow of air* regardless of how variable the compressor load might be!

Other advantages offered by the Pneumastat are:

- ✓ Higher average working pressure—more work from your tools.
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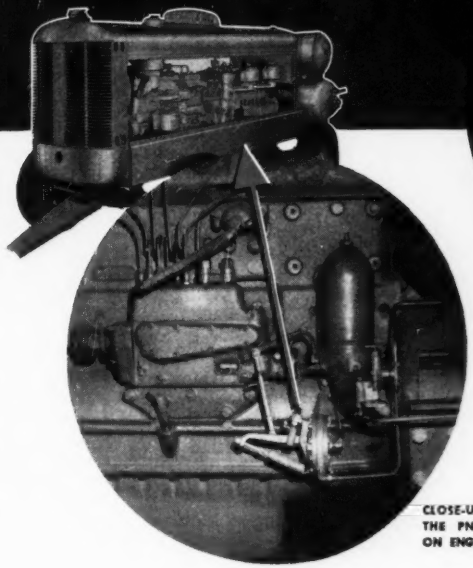
COMPLETE DETAILS ON REQUEST, WRITE DEPT. AOW.



CLOSE-UP VIEW OF THE PNEUMASTAT ON ENGINE BLOCK

SCHRAMM INC.

THE COMPRESSOR PEOPLE . WEST CHESTER . PENNSYLVANIA

LEGAL ADVENTURES OF TRACTOR CONN

By LESLIE JOBB

By recounting the experiences of Tractor Conn, who symbolizes the average contractor, this series of articles, each based on the decision of an American court and presented in plain, non-legalistic terms, is designed to help construction men avoid costly legal pitfalls.—Editor

The Case of the "Novation"

A Wisconsin owner had employed Tractor Conn to erect a building and Conn let the carpentry work to a subcontractor. The latter died insolvent, leaving the work unfinished, first having assigned his contract to a local bank as collateral security for an existing indebtedness.

Then the bank called in the owner, Tractor Conn, and the subcontractor's administrator.

"With your consent, and for our protection we propose finishing the contract, and standing in the subcontractor's shoes," the bank suggested.

"Suits us," all parties agreed. This arrangement was carried out, and then the bank filed a lien on the building.

"You are not a subcontractor within the meaning of the law and are not entitled to a lien," the owner contended.

"When we made that arrangement in the bank office, you accepted us as a subcontractor, and there was a complete 'novation,' " the bank contended, and the Wisconsin Supreme Court so ruled in a case reported in 94 N. W. 74.

The Case of the California Fraud

Tractor Conn sold out his California business, received part cash, and two notes for the balance, one secured by a mortgage on the land sold, and after a bit the buyer claimed that he had been defrauded.

"I just learned of the fraud this morning," the buyer averred.

"There was no fraud, your notes are overdue, and what are you going to do about it?" Conn demanded.

The result was that the buyer paid part of the balance by deeding a lot of land to Conn, gave a new note and mortgage for the remainder. The new note was not paid, the note and mortgage were renewed, and then the buyer resisted payment of the last note on the ground of fraud in the original contract.

"You're too late, even if there was fraud. What you did after discovering the alleged fraud was an affirmance of the original contract," Tractor Conn argued, and the California courts decided in his favor in Ruhl vs Mott. 120 Cal. 668.

The Case of the Most Suitable Route

Tractor Conn had made an agreement with the State to locate and construct a road between two points at a certain price per mile, "by the nearest, cheapest and most suitable route," and the Board of Trade of a certain town strongly urged that the road be located to pass through its town.

"It'll cost more money to put the road through there," Conn pointed out.

"What do you care? The State's paying, and when the road goes through our town we'll pay you a bonus of $20,000," the Board offered. And, strange to say, the road passed through that particular town.

Having got the road the Board of Trade refused to pay the bonus, and Tractor Conn sued.

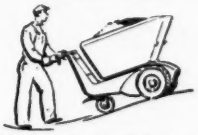
"The agreement was void, as it was really an agreement by an employee to violate his obligation to his employer, in this case, the State," the Board of Trade contended, and the United States Supreme Court ruled that the point was well taken in a case reported in 129 U. S. 643.

More Legal Adventures of Tractor Conn Next Month

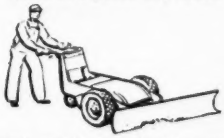
Bucket holds 10 cubic feet . . . 18 with sideboards

Mechanically dumped . . . operates by foot pedal

9-square-foot steel platform takes half-ton loads



Climbs 20% grades fully loaded



50-inch steel blade makes Prime Mover an efficient snow plow

FEATURES:

- gear driven . . . no belts or chains
- fully enclosed engine protected against dirt and moisture
- clutch, engine, transmission all run in oil
- switch from bucket to platform without tools . . . in less than a minute
- turns in its own length (63½"); width 31½"
- 3-gallon tankful of fuel gives 8 hours continuous service

A PRODUCT OF

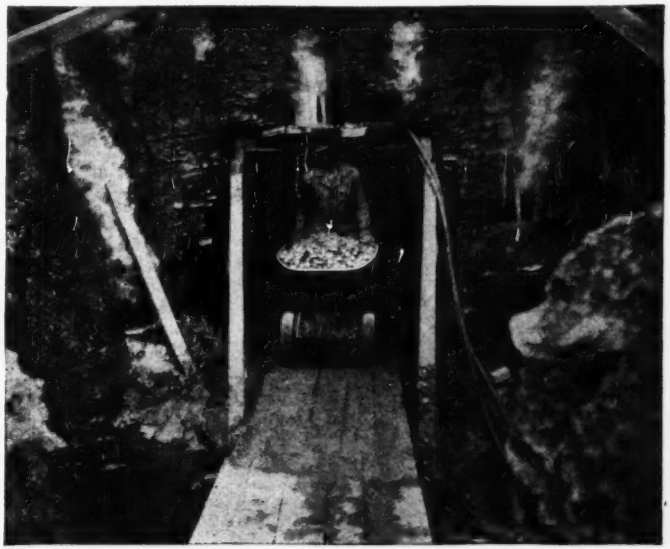
BELL *Aircraft* CORPORATION

*Patents & T. M. Reg. Pending Copyright, 1949

The BELL *Prime Mover*

– eliminated cars, track, and skip hoist on tunnel job at Wright Field

VEST & BARTELL, Cincinnati contractors have discovered that Prime Movers not only save time and manpower, but frequently substitute for costlier equipment. This was clearly demonstrated on a 4′x 5′ rock tunnel beneath the gun range at Wright Field. Here Prime Movers functioned right in the tunnel itself . . . hauling broken rock out of the tunnel and up a steep ramp to the surface, and from there to a disposal dump several hundred feet away.



● Combining the features of a giant motorized wheelbarrow, a 9- or 14-square-foot platform truck, and a powerful snow plow, the Bell Prime Mover is an ingenious answer to the problem of cutting costs and reducing labor on construction projects.

With Prime Movers on the job . . . pouring concrete and doubling the productive capacity of wheelbarrow or "buggy" gangs . . . work can be expedited on almost any job. You can take some of the guesswork out of figuring labor costs, for Prime Mover savings provide a cushion against increased labor rates.

All of these facts can be proved conclusively by an on-the-job demonstration. *It took only half an hour at one of these demonstrations for a contractor to sideline six concrete buggies in favor of two Prime Movers on a 160-yard pour. Two men finished the job in 7½ hours.*

If you would like to see a Prime Mover . . . or a "fleet" of them in action, we'll gladly make the arrangements. For more information, please attach this coupon to your letterhead and mail it to us at once.

SEND COUPON NOW

Bell Aircraft Corporation
P. O. Box 1C4, Buffalo 5, N. Y.

Please send me facts on the Bell Prime Mover. Who is the nearest distributor?

Name.....

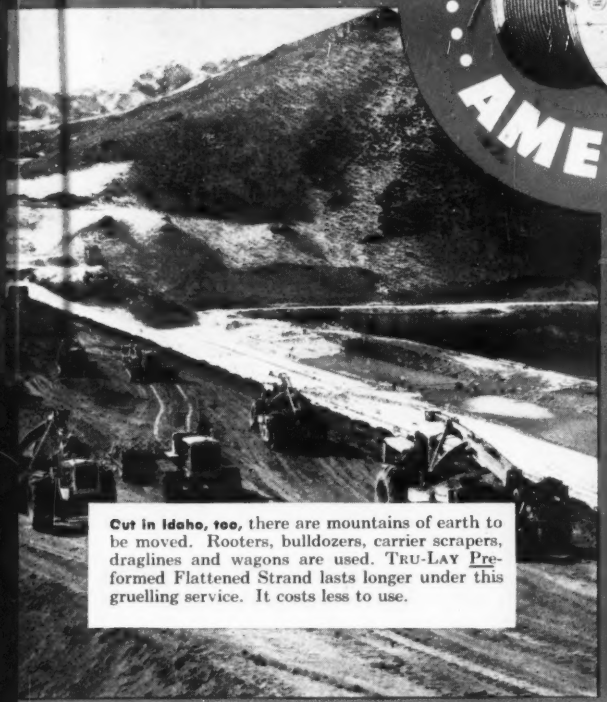
Address.....

Company.....

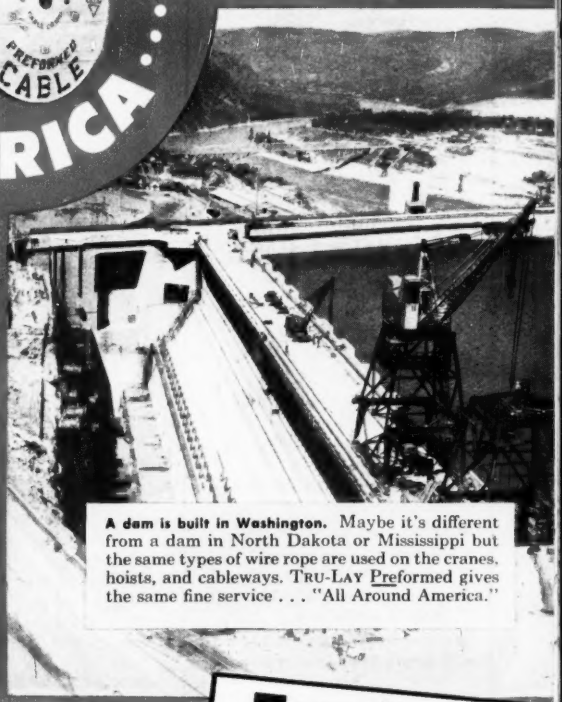
City, Zone & State.....

In Southern Illinois strip mining is big business. The shovels and draglines that remove overburden are big, too. TRU-LAY Preformed in large sizes has excellent qualities that make it a favorite for strip mining.

At Detroit a portal crane straddles gondola cars and loads them with foundry sand from storage piles. TRU-LAY Preformed is made in a construction designed for longer service under such abrasive conditions.



Cut in Idaho, too, there are mountains of earth to be moved. Rooters, bulldozers, carrier scrapers, draglines and wagons are used. TRU-LAY Preformed Flattened Strand lasts longer under this gruelling service. It costs less to use.



A dam is built in Washington. Maybe it's different from a dam in North Dakota or Mississippi but the same types of wire rope are used on the cranes, hoists, and cableways. TRU-LAY Preformed gives the same fine service . . . "All Around America."

ACCO

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Seattle, Tacoma, Bridgeport, Conn.

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

In Business for Your Safety

Tru-Lay *Preformed* **Wire Rope**

EQUIPMENT MEN

and Their Companies

Current developments among manufacturers relating to expansion of services, shifts in personnel, and other changes, include the following:

Sales

Southwest Welding & Mfg. Co.—A. H. Teterick is sales manager of the construction machinery division.

Marlow Pumps—A. S. Rubin, Jr., is new sales manager.

Syntron Co.—Philadelphia branch sales office has moved to larger quarters at 1018-20 West Lehigh Ave., Philadelphia 33, Pa.

Kennametal, Inc.—Jas. V. Wilcox and J. C. McGuire are sales and service representatives at Provo, Utah and Eastbank, W. Va., respectively.

Allis-Chalmers Tractor Division—R. F. Garity has been appointed eastern industrial territory manager.

Four-Wheel Drive Auto Co.—Rodney Fox has joined the sales staff.

Timken Roller Bearing Service and Sales, Ltd.—T. F. Rose has become manager at Toronto, Ont.

Hyster Co.—F. W. Vigneautt, Jr., has been named district representative for tractor equipment in the northeastern territory.

Chain Belt Co.—Homer L. Knouse is southern sales representative for the construction machinery division.

Penn Metal Co. Inc.—A. D. Goodson, Jr., has been appointed district sales manager for the Texas territory at 3802 Ruth St., Houston.

W. A. Riddell Corp.—A. W. McGraw has been added to the road machinery sales staff.

International Derrick & Equipment Co.—K. H. Brunt is industrial sales representative and W. E. Knox industrial sales engineer for the California division, at Torrance, Calif.

B. F. Goodrich Co.—I. N. Kimsey is field sales manager of the industrial products sales department and H. F. Mosher is manager of the Dallas, Tex., district.

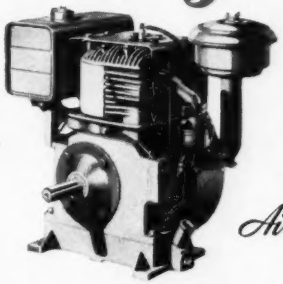
Nordberg Mfg. Co.—Marvin Wall is sales engineer for the heavy machinery division in the southwest territory at 419 Cotton Exchange Bldg., Dallas, Tex.

Distributors

Hyster Co.—McCall-Boykin Co. Inc., Calvert & 20th Sts., Baltimore, Md.,

(Continued on page 102)

It will pay you to select Briggs & Stratton Engines



"Preferred" Air-Cooled Power

You'll get *top* performance from your equipment when you choose Briggs & Stratton as your gasoline power!

Here's why. Briggs & Stratton engines give you the advantages of the most modern 4-cycle, single-cylinder, air-cooled design—the result of over 30 years of continuous research and production. They're precision-built of finest materials. They're strong, tough, durable. They cost less to operate.

That's why users and dealers ask for Briggs & Stratton power when they want gasoline powered equipment, appliances or machinery. That's why Briggs & Stratton powered equipment is easier to sell—and preferred power to own. Choose Briggs & Stratton engines for your requirements. They're today's outstanding power value.

BRIGGS & STRATTON CORP., Milwaukee 1, Wis., U. S. A.

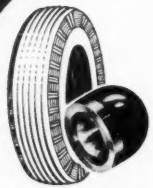
4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES
World Wide FACTORY SUPERVISED SERVICE

Reduce Form Damage with NEW VIBER RUBBER TIPPED VIBRATORS

Viber Company has long recognized the destructiveness of steel vibrators on many popular form lining materials.

Realizing that damage to Celotex, plaster of Paris inserts for architectural concrete and plywood is expensive, they studied the possibility of using RUBBER TIPPED VIBRATORS.

After critical tests on many large concrete construction jobs, it was found that the new VIBER RUBBER TIPPED VIBRATORS greatly reduced form costs.



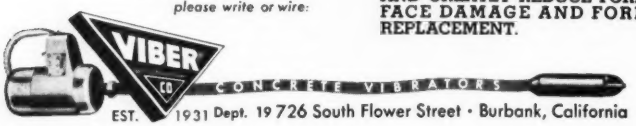
Made of high quality live rubber, Viber's Rubber Tipped Vibrators are built to withstand extreme punishment (the same rubber used to make automobile tires)

New style housing with replaceable rubber tips may be used in place of one-piece steel housing. Rubber tips are easily replaced. Simply unscrew worn part and install new tip.

Available in three standard VIBER sizes:

For additional information please write or wire:

VIBER RUBBER TIPPED VIBRATORS MINIMIZE GRINDING AND GREATLY REDUCE FORM FACE DAMAGE AND FORM REPLACEMENT.



(Continued from page 101)

is new distributor of lift trucks, straddle trucks and mobile cranes in the vicinity of Baltimore.

Diamond Chain Co. Inc.—Chase Parker & Co. Inc. 288-290 Congress St. are distributors in the Boston, Mass. area.

George Haiss Mfg. Co. Inc., division of Pettibone Mulliken Corp.—Dan G. Cogwood, Jr., 272 Highland Ave., Newton, Mass., is exclusive representative of conveyors, loaders, buckets, material handling equipment, crushers, asphalt plants and railroad equipment representative in Maine, New Hampshire and part of Massachusetts.

Clark Equipment Co.—Distributorship for fork lift trucks and industrial towing tractors has been granted to Bond Industrial Equipment Co., 51 Clarkson St., New York.

Nelson Stud Welding Division, Morton Gregory Corporation — Victor Equipment Co., San Francisco, Calif., is exclusive distributor for stud welding equipment and products in the Pacific coast area.

Davey Compressor Co.—J. P. Waite, Inc., 3304 West Pierce St., Milwaukee, Wis., has been appointed to a full line dealership.

Personalities

Macwhyte Co.—H. S. Dershimer is a direct factory representative in Tulsa, Okla.

Waukesha Motor Co.—Lloyd L. Bower is chief engineer, succeeding J. B. Fisher, retired.

Air Reduction Sales Co.—Dr. G. V. Slottman is director of research and engineering.

Durisol, Inc.—Thomas J. Dale is superintendent of the main manufacturing plant at Beacon, N. Y.

American Brake Shoe Co.—Kempton Dunn is vice-president and Cyrus E. Brush secretary.

Fairbanks, Morse & Co.—Louis R. Gaiennie is director of personnel at Beloit, Wis.

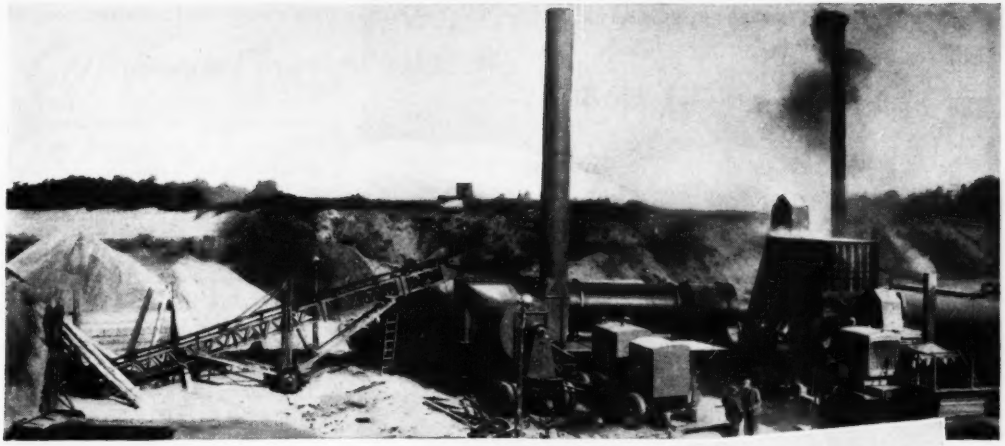
American Bridge Co.—Malcolm D. Corner is commercial research manager at Pittsburgh, Pa.

Armstrong Cork Co., Building Materials Division—P. M. Hummer is manager of the Philadelphia district office.

General Builders Supply Corp.—Former Postmaster General James A. Farley is now president, succeeding the late John P. Kane.

SKF Industries, Inc. — Stuart H. Smith is the new Cincinnati district manager, and C. N. Benson, D. B. Eden, Boston; A. R. Ehrnschwender, Cincinnati; J. T. Paradine, Atlanta,

(Continued on page 104)



THESE BIG ASPHALT PLANTS ARE

Going Places!

● How would you like a big asphalt plant that you can set up in a few hours . . . one in which all mixing operations are fully automatic?

Now, you can get these two important features . . . plus many more . . . in a plant that produces 100-150 tons of material an hour. It's PIONEER'S Continuous Process Asphalt Plant.

This big plant consists of only three main units, the mixer and the dryer and the dust collector. Each is a complete unit mounted on its own pneumatic tired truck. *It's the most portable large asphalt plant ever built.*

All mixing operations are fully automatic . . . fully controlled, because the asphalt metering pump and the aggregate feeder are interlocked. They are synchronized to work together. The human element in proportioning is out . . . the correct mix is assured.

If you're going after big black top jobs this year, better get full details about PIONEER'S Continuous Process Plant now. It can give you better material mixed to closer tolerances at lower cost per ton. Mail the coupon today for our new handbook.

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota

BUY BOTH!
Higher Output, Lower Upkeep!

Pioneer

Continuflo **EQUIPMENT**

Pioneer Engineering Works
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● Please send me your new handbook on Pioneer Continuflo Asphalt Plants.

Name_____

Address_____

City_____ State_____

SUPERIOR IN EVERY WAY
DESIGNED TO PROVIDE ALL PRACTICAL SHAPES QUICKLY AND EASILY
DOWEL JOINT CURB FORMS •
STRAIGHT, RIGID AND FLEXIBLE RADIUS CURB AND GUTTER FORMS •
SIDEWALK FORMS
Heltzel
BUILDS IT BETTER
Compare Heltzel forms with any other make . . . the most rigid, the most completely engineered equipment obtainable . . . straight, radius, flexible and serpentine curbs and gutters and sidewalks are formed swiftly and economically with the barest minimum of labor where Heltzel forms are used. Let us send you complete information, including illustrations of the Heltzel line — ASK FOR BULLETIN A-20-F.
SHAPES, STANDARD OR SPECIAL, ARE EASILY MADE FROM HELTZEL STEEL FORMS
HELTZEL
STEEL FORM & IRON CO.
WARREN, OHIO · U. S. A.

(Continued from page 102)

Ga.; and G. L. Hansen, Portland, Ore. are the new field representatives.

Miscellany

Penn Metal Corp.—This company is celebrating its 80th anniversary this year.

Walter Bates Co., Inc.—New address is 500 Milk Road, Joliet, Ill.

Chain Belt Co.—Los Angeles district office and warehouse have been moved to 3838 Santa Fe Ave., Los Angeles 11, Calif.

Tractomotive Corp. — Formerly of Findlay, Ohio, this company has moved to its new plant at Deerfield, Ill.

The Ruberoid Co.—Construction of a dry felt mill to be erected on property adjoining the company's asbestos and asphalt roofing mills on Emogene Street, Mobile, Ala., is to be started immediately.

Cleveland Crane & Engineering Co. —This company has been purchased outright by The McNeil Machine & Engineering Co. of Akron.

Marsh Wall Products, Inc. — Top management has been re-organized for operation as a subsidiary of Masonite Corp. The following six Masonite directors are now on the Marsh board: John Alexander, Jr., Ben O. Anderson, John M. Coates, Mr. Holland, M. P. McCullough and Aytch P. Woodson. Alvin C. Marsh, Victor R. Marsh and John J. Marsh, all former Marsh directors, remain on the new board. Masonite officers moving into Marsh executive positions are Mr. Holland, president; Mr. Anderson, treasurer, and Mr. Coates, assistant secretary. Election of Victor Marsh as executive vice-president, Alvin Marsh as vice-president and John Marsh as secretary and assistant treasurer completed the new roster.

Permanente Cement Co.—They have purchased a 5-acre section of the Portland, Ore., shoreside tract known as the Albina River lots. The property, located on the Willamette River shore is immediately adjacent to leased facilities now being used by Permanente to supply 750,000 lb. of cement for the construction of McNary Dam, on the Columbia River.

CASH FOR PICTURES

Enter the monthly CONSTRUCTION METHODS picture contest. Prizes of $25, $15 and $10 will be paid each month. See the announcement in the March issue and also on page 37 of this issue.

Cut Your Costs On Every Type Of Construction Job... With BLUE BRUTES!

Here are typical examples of the up-to-the-minute design, long-lasting construction and smooth, dependable performance now proving to contractors all over the world that there's more worth in a Blue Brute. Your nearby Worthington-Ransome Dealer has the complete line of Blue Brute Construction Equipment. Write for his name.

WORTHINGTON PUMP AND MACHINERY CORPORATION
Construction Equipment Department
Harrison, New Jersey
Distributors in All Principal Cities

WORTHINGTON

Concrete Costs Less!

Count on Blue Brute Portable Mixers for lower-cost concrete on every job. Quickly spotted and towed, and with such features as smooth, positive gear-and-pinion drive . . . high-carbon, Timken-equipped drum rollers . . . and Ransome's famous mixing action, they're sure bets for speedier, better mixing.

Water-Handling Cheaper!

You'll move *more* water — faster, farther, easier with a Blue Brute Self-Priming Centrifugal Pump. Rugged in every detail, with fast pickup, extra reserve power and high resistance to rust, corrosion and ordinary wear. Built in A.G.C. sizes to A.G.C. standards.

More Air For Less Money!

Get *all* the air-power out of every drop of fuel with a Blue Brute 60′ Portable Air Compressor. Strong, light and efficient, it provides constant, dependable, economical air supply through its easy-breathing Worthington Feather* Valves. Other Blue Brute Compressors, from 105′ to 500′.

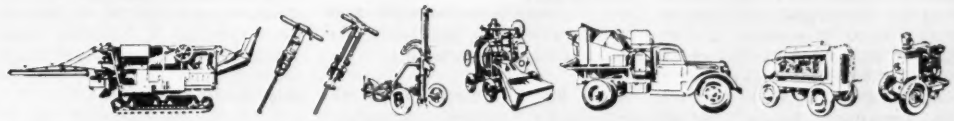
*REG. U.S. PAT. OFF.

Construction Expenses at Rock Bottom!

Team up these fast, hard-hitting Blue Brute Air Tools with Blue Brute Compressors — and watch your daily expenses go down. Though tough and powerful, they have the lightness and compactness to keep your workers more satisfied—and more productive.

HB-3

BUY BLUE BRUTES



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

It Pays to ORGANIZE Your Office

Contractor's Job Office Procedure . . . Part 3

THIS IS THE LAST of a three-part series of articles on construction office management, taken from the "Manual of Job Office Procedure" prepared for its employees by Johnson, Drake & Piper, Inc., Minneapolis, Minn. The series is published by kind permission of this firm of contractors. The first article (February 1949) dealt with bidding and starting the job, cost accounting and payroll preparations. The second article (March 1949) covered material purchasing, job estimates, and closing out the work. The final installment includes several Addenda to the main manual pertaining to cost distribution, office forms and stationery, and insurance and bonds.

ADDENDUM No. I . . . Code of Job Cost Accounts

General Explanation and Instruction

FOR MAXIMUM CONVENIENCE in learning and remembering code numbers, auditing invoices, and figuring labor cost distribution, it is recommended that the same code be used for all types of jobs. A decimal system gives flexibility permitting addition of new accounts whenever needed and allows unlimited subdivision. At the same time it facilitates orderly grouping. A brief explanation is given below of each code section and some of the special code accounts.

1.00 *Preliminaries* — These expenses are those encountered before operations start and in cleaning up the job. For example installation, maintenance and removal of traffic barricades go to account 1.07. General cleanup, 1.50 includes all cleanup that cannot be applied against a specific item.

2.00 *Plant and Equipment Set-Up* (includes dismantling)—The items in this section can be subdivided as desired. For example, 2.01 could be subdivided into 2.01.01 Office, 2.01.02 Warehouse, 2.01.03 Machine Shop, 2.01.04 Carpenter Shop, 2.01.05 Cement Sheds, and so on as far as you wish. Account 2.09, Temporary Roads, like all other accounts, can be subdivided into detours, temporary culverts and bridges for public use, drainage, and so on. Account 2.10 covers trestles, truck roads, temporary bridges, cableways, conveyors, electric railways and the like, when used for our own construction operations, and includes building, maintenance, and dismantling.

Account 2.11 is similar to 2.10, but for less extensive installations.

Account 2.12, Night Lighting, is for cost of installations and maintenance; but power expense comes under 20.11 Electric Power.

3.00 *Site Work*—These items seem self-explanatory. Usually seeding, planting, landscaping and sodding are subbed (Account 15.08), but if we do them ourselves, they should be added here rather than under section 16.

4.00 *Foundation Excavation*—For building jobs primarily. If we do any major highway excavation with our own forces, use account 16.01 or pertinent subdivisions. On heavy construction, section 4.00 will usually apply, but sometimes you will use 16.00 accounts.

5.00 *Special Foundation Work and Flood Protection*—Use mainly for dams, piers, bridges and the like. Occasionally water is found on a building job. Tunnel or aqueduct work may call for some additional accounts in this section.

6.00 *Concrete Forms*—The material items in this section include purchase, freight, unloading and handling. Since material cost can be computed from invoices and known quantities, and since it is difficult to distribute a form lumber bill to foundations, floors, columns, etc. (for example), materials will not very often be subdivided decimally into classes of form work. However, labor costs are easily spread to various subdivisions of each form labor account.

7.00 *Reinforcing Steel*—Same remarks as Section 6.00, in general.

8.00 *Concrete*—Again, same remarks as for Section 6.00. In highway paving, the cost per yd. of materials is most accurately found by computation from the mix formula, and prices of cement, and aggregates. Labor costs, for various classes of paving, or for structures, or for incidental items, can be kept for as many subdivisions as desired. Example, 8.09.01, placing class A; 8.09.02, B; 8.09.03, placing bridge X. Mixing plant operation would hardly ever be divided by classes of concrete, on the other hand.

9.00 *Miscellaneous Metal Items* —It is hardly possible to think of

Spike Sez: Sure, and it takes a lot of stuff to equip the field office, just like it does the outside job, but well-equipped job and office is a combination that can't be beat.

them all in advance, so do not hesitate to add on what you need. Tell Minneapolis, so the description will be on the statement after the number you select. Installation and handling labor are distributed to each of your accounts as needed, as well as the purchase price.

10.00 *Masonry*—Same remarks in general as section 9.00. Some of these items in section 10.00 are obviously materials and labor both, and some are just labor.

11.00 *Building Items*—Same remarks as 9.00 and 10.00.

12.00 *Highway Items*—Same remarks as 9.00 and 10.00.

13.00 *Bituminous Paving*—Same remarks as 9.00 and 10.00. However, we have done none of this work on highways for many years.

14.00 *Held Open Until a Need Develops.*

15.00 *Subcontractors*—Most of these items are generally let to subcontractors, and their bids are easily coded. If we do some work in addition to the sub (not a "back charge" to the subcontractor), it is also charged to the same account. Items to be "back-charged," are coded as a back charge. Example: We might buy some paint for the painting subcontractor. Instead of charging it to a job cost account, it is coded "back charge John Doe, paint subcontractor, Job 400."

16.00 *Sub-Items Done by Johnson, Drake & Piper*—Sometimes we may not get any satisfactory sub-bids on a certain item, or for some other reason decide to do the work ourselves. In such a case, use the same suffix as that type of work under 15.00, subcontractors, but tabulate it in the 16.00 sections.

Overhead Sections — Sections 20.00, 21.00, 22.00, 23.00 and 24.00 are overhead sections. Some of your items in sections 1.00 and 2.00 are also "overhead," in the sense that they are not "pay" items. However, they are operations that occur at the beginning and end of the job, for the most part, and in general involve the labor force and physical elements. While some of the "20 series" accounts also involve labor crews and physical operations, most of them are less tangible, are more continuing in nature, and are not easily applied to elements of construction. Our objective is to group them here for convenience.

20.00 *General Overhead*—20.01, Administrative Salaries, is for home office use. It includes only monthly salaries paid from Minneapolis. Engineering and Drafting, 20.02, is for engineering labor, drafting supplies and tools. Administrative Travel and Subsistence, account 20.03, is for expenses incurred on business trips between the area office, home office and job site. Employment Procurement and Hiring, 20.04, is ordinarily used only on large jobs when recruiting of labor locally is difficult. Account 20.05, Employee Travel, is used when we pay expenses to the job, or when a non-staff employee is sent on an errand, or makes an expediting trip. 20.06, Employee Identification, is used on jobs where the government has set up security regulations. 20.07, Idle Time, is a payroll item for cost of maintaining stand-by crews, when weather conditions, material delays, or other considerations make it impossible to work.

20.08 Premium Time, is the extra pay over straight time rates usually required for work over 8 hr. in a day, for more than 40 hr. a week (with a few exceptions), or for work in some cases on week ends or holidays. It is usually better to distribute such overtime pay to production accounts, but sometimes this cost has been figured as a separate item, and our engineers must have it accumulated as a separate item for comparing actual costs to the budget. Maybe threatening rain or arrival of a large shipment of cement make it necessary, to complete the cement sheds on overtime. But no more man-hours are needed, so the extra cost of some of them is a general overhead expense.

20.09 Handling Lumber in Yard,

(Continued on page 108)

For Those Hard-To-Get-At Corners

THE OSGOOD HOE

Powerful and easily maneuverable OSGOOD hoes dig deep and fast, dump clean. The all-steel reinforced boom provides long reach and high dumping. The operator has clear vision and precision control of all movements for quick and accurate spotting of the dipper. The power dipper trip saves time and energy. The OSGOOD is versatile, too; is easily converted from Hoe to Shovel, Crane, Dragline, Clamshell or Piledriver. Write for descriptive literature and specifications.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. 06 THE GENERAL CO. EXCAVATOR

MARION OHIO

DIESEL GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

Choose the rugged MILLER *Tilt Top* for all heavy duty hauling

- *HYDRAULIC TILT CONTROL*
- *TWO SPEED WINCH*
- *ELECTRIC BRAKES*

Shown is our heavy duty MODEL B 10 ton.

Miller trailers fit all your hauling requirements featuring 3 to 10 ton models. Model B has electric brakes, hydraulic tilt control, 16" deep axle with Budd hubs and wheels, plus many other features making it the safest and most dependable trailer on the road.

IMMEDIATE DELIVERY

Prices $450 to $895

Some dealer franchises AVAILABLE

Write for details

DEPT. M.

RAY MILLER RESEARCH ENGINEERS

MILWAUKEE 8, WISCONSIN

(Continued from page 101)

is set out as a separate warehousing cost because it is a frequently encountered item, and often an expensive one. 20.10 is of the same nature. 20.11 Electric Power, is for shop tools, office, night lighting, and so on. All bills for water used in concrete plant, curing, office, shops, etc., go to account 20.12. Heat Temporary Buildings, Account 20.13, is for stoves, etc., in office, shops, sheds. Demurrage, 20.14, is self-explanatory. Winter Protection, 20.15, is expense of inclosing work spaces, sheltering concrete, salamanders, heaters, fuel, and so on.

General Supplies, 20.16, includes cable, paper cups, light bulbs, and the like which are items consumed. Small tools is account 20.17. General and Shop Tools, 20.18, are those of a more permanent nature than the small tools, but not expensive enough to capitalize, usually up to $50. We do not have a hard and fast limit, however, as some items of greater cost have very short lives.

Fees for Consultants

Architectural and Engineering Fees, 20.19, is for consultants or other services of firms or individuals hired professionally. It does not include remuneration of employees who do engineering work. Entertainment, 20.20, is for lunches or more elaborate entertainment of owners' representatives or others. The office manager at the job will do the coding, but entertainment expense is approved or authorized in advance by the area manager. Progress Photos, 20.21, should be for bills from commercial photographers mainly. Sometimes films and developing for private cameras will be included. Night Watchman, 20.22, is put here because it is a general item. 20.23 is self-explanatory. Employees Subsistence Allowances, 20.24, covers the situation where non-administrative men must be paid daily or weekly living allowances, because labor is hard to obtain, or for other reasons. Superintendent, 20.25, is for all superintendents and assistant superintendents, and foremen who cannot be allocated to definite work items.

22.00 *Insurance and Taxes*—This is largely for home office use, but copies of invoices charged to these accounts should be sent to

(Continued on page 147)

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The Election of November 2, 1948 GAVE NO MANDATE FOR SOCIALISM

The President and those who support his legislative program have objected to the substance of my previous editorial, which appeared under this headline: "Now is the Time to FIGHT SOCIALISM in Washington."

In that editorial I explained how Washington is poised to follow the disastrous policy of forcing industry to skimp on new plants and new equipment. That policy landed Britain in the numbing embrace of the Socialists. I cited the experience of Britain to show how such skimping on industrial tools can bring a nation to economic stagnation . . . and Socialism.

The President, in his recent Jackson Day speech, brushed aside this warning . . . "They are again trying to frighten the people with the old worn-out bugaboo that Socialism is taking over in Washington." Senator Francis J. Myers of Pennsylvania asserted that I was guilty of "warfare against any reasonable effort to keep our system of free enterprise working."

These criticisms may be sincere. But they are not well-founded.

I want to show why they are not well-founded by basing this editorial on Washington rather than Britain.

In Washington the Administration has proposed a legislative program, the key parts of which would clearly put the country far on the road to Socialism. Let us see how.

There are two steps in the process:

FIRST: The government by its taxation program undermines private industry so that it cannot provide itself with the necessary new plant and tools.

SECOND: The government itself steps in to provide the plants and equipment that it has blocked industry from getting. *That is Socialism.*

Here is how Washington is promoting Socialization of the steel industry—and of other industries.

Steel has been expanding its capacity and improving its equipment chiefly by plowing back its profits. During the last three years it has spent $1.4 billion for new plants and new tools. That was more than the companies had available from their own earnings. But profits provided more

continued on next page

than half of that money—more than $700 million. The remainder came from loans and from depreciation reserves set aside out of the earnings to replace worn-out equipment.

Profits must continue to provide the funds needed to pay for the bulk of the steel industry's necessary expansion. That is because private citizens, their income slashed by heavy taxes, have not been willing to buy steel stocks even at prices ruinously low for the companies and their present stockholders. The stock market currently prices the mills and other facilities of the nation's principal steel-producing companies at far less than fifty percent of the cost of reproducing them.

Let us take another example. Profits are essential to expansion in the electric light and power industry also. This year private companies are planning to buy $2 billion worth of new plant and equipment. To do that without going overboard in debt, they must sell to the public some $300 million worth of common stock. A squeeze on their profits would make that sale virtually impossible.

For tens of thousands of small business enterprises profits afford virtually the only practical source of funds for new equipment and expansion.

In the face of these and many other examples that might be cited, what is the most effective way to prevent industry from re-equipping itself and expanding is capacity to meet our essential needs?

Obviously, it is to cut down profits. And that is what the Administration is trying to do. The President has declared that steel prices are too high, and is demanding that Congress raise taxes sharply on all corporations.

There you have the first step toward socializing industry.

Next comes step two. Have the government supply the tools and equipment which, by taxation, it prevents industry from getting.

The Administration has proposed legislation to carry out this second step. It is called the "Economic Stability Act of 1949," for short, the "Spence Bill."

This bill gives the President the power to provide industrial facilities—in steel, power or any other industry—where he finds that a shortage is hampering or is likely to hamper the economy.

True, the bill says that the government is not to construct new plants if private companies will do it through government loans, on terms prescribed by the President. That may be just one step short of complete socialization. But it is only a short step. And the Spence Bill authorizes the government to take that step.

By itself, the Administration's "Stability Act" sounds harmless enough. It would have the government build plants only as a last resort. But it provides also that if private enterprise cannot turn out all the goods the country needs, the government can and should step in and provide the equipment to do it.

Now, take that power together with an Administration tax program that undercuts the ability of private enterprise to supply the new plants and equipment it needs out of its own earnings. That combination promotes government ownership and operation of industry.

And that is Socialism.

The American people, of course, have the right to live under any system they choose—Capitalism, Socialism, Fascism, Communism, or what-have-you. But before Socialism or any other "ism" is imposed upon us from above, the people should know the facts. If this editorial shall have contributed in some small degree to that end it will have served its purpose.

The election of November 2, 1948 gave no mandate for Socialism.

President, McGraw-Hill Publishing Company, Inc.

SINCLAIR TENOL Engines Clean

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YOUR NEAREST SINCLAIR AGENT WILL GLADLY ARRANGE

Keeps Heavy-duty As It Lubricates

When sludge, carbon, gum or varnish are present in an engine, it means TROUBLE . . . sticky valve stems, stuck rings, clogged oil lines and screens. This leads to early and frequent overhaul and costly maintenance.

With Sinclair TENOL as the lubricant, these troubles need not be a problem—for TENOL keeps engines clean as it lubricates. Specially developed Sinclair additives retard oxidation and prevent gum and varnish from choking piston ring grooves, sticking valves, clogging oil passages and pump screens. Soot, sludge and fuel contaminents are kept in suspension and drained out with the oil at oil change periods. So clean up and keep clean with Sinclair TENOL—for diesels and other heavy-duty engines.

This Pilot Plant, part of the great Sinclair Research Laboratory at Harvey, Ill., provides space for six miniature operating replicas of commercial-sized refinery units. Continuous research explains the high quality of TENOL and other Sinclair Oils.

Making a study of crystal structure of catalysts, this Sinclair researcher at Harvey uses physical chemistry to develop refinery techniques in a never ending effort to bring industry better petroleum products at lower costs.

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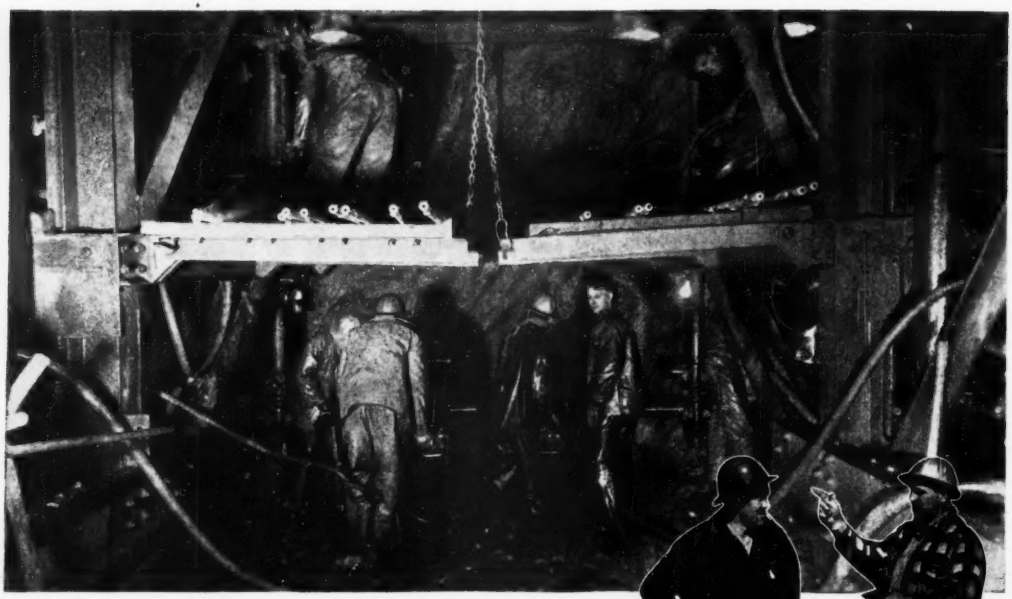
FOR LUBRICATION COUNSEL, OR YOU MAY WRITE TO SINCLAIR REFINING COMPANY, 630 FIFTH AVE., NEW YORK 20, N. Y.



Here is one of Morrison-Knudsen's record-breaking drilling crews at the upstream face of their 4000-ft section of the 34,700-ft Rock Creek Tunnel. Contractors for other parts of the tunnel and dam construction work are: Walsh Construction Co., T. E. Connolly, Inc., and the Arundel Corp. & L. E. Dixon Co. All use Bethlehem drill steel.

New drilling records speed tunnel *at Feather River Project*

L. E. Huntington, at left, tunnel superintendent for Walsh, is the uncle of F. A. Huntington (right), the "super" for Morrison-Knudsen. Rivalry is keen between these two contractors, each driving different ends of Rock Creek Tunnel.

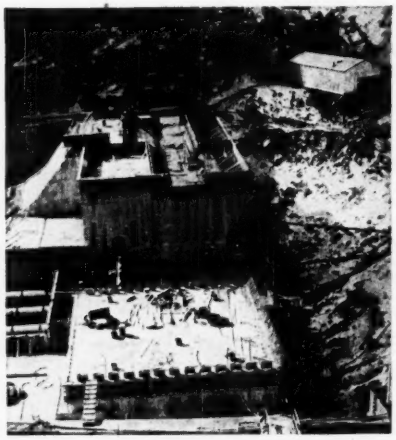
On Pacific Gas & Electric Company's $62,000,000 hydroelectric construction project in Northern California, two contractors using Bethlehem hollow drill steel have recently established what we believe are new all-time records.

Driving upstream from the site of Rock Creek powerhouse, Walsh Construction Company, drilling through the hard granite of Feather River Canyon, advanced 211 ft in six days during January—a record average of 35 ft per day.

Driving downstream on the same 25-ft diameter horseshoe tunnel, The Morrison-Knudsen Co., Inc., set the record for the most footage in 24 hours—47 ft driven on December 8.

Walsh uses Bethlehem hollow drill steel with detachable bits, averaging 4 or 5 drilling rounds of 10-ft depth per day. Morrison-Knudsen employs Bethlehem hollow drill steel with conventional forged bits.

Two other contractors on this project are users of Bethlehem drill steel. They are T. E. Connolly, Inc., constructing the main bypass and surge tunnels; and the Arundel Corp. & L. E. Dixon Co., driving the central, 24,000-ft section of the Rock Creek Tunnel.



General exterior view of the mouth of Rock Creek Tunnel (upper right) and Rock Creek Dam. This project will divert surging water from Feather River through tunnels to develop some 270,000 hp at two powerhouses for distribution to California industries.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by
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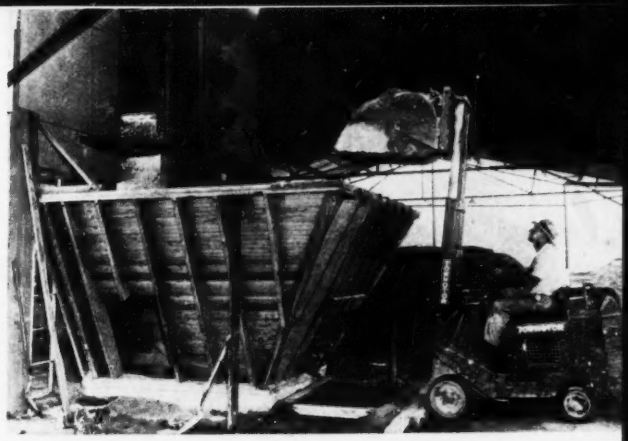
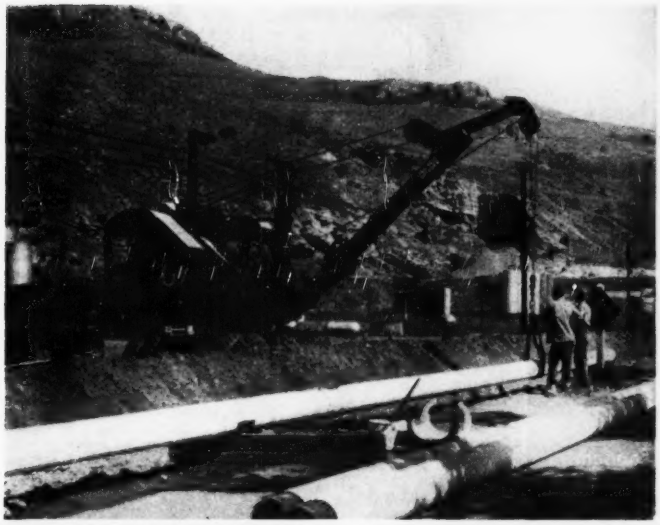
BETHLEHEM HOLLOW DRILL STEEL

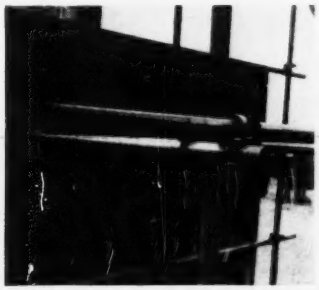
HOW ...they did it



FOR MOVING SAND used in producing mortar and raising it to elevation sufficient for discharge into hopper, Macatee Inc., of Dallas, Tex., uses Towmotor fork-lift truck equipped with scoop.



TO HANDLE PIPE on fast (7 week) schedule for laying 10 mi. of oil pipe-line, P.L. Henderson, Salt Lake City contractor, rigged up bucketless backhoe. Load-line sheaves replace dipper at end of hoe arm on rubber-mounted ½-yd. Link-Belt Speeder UC-55 machine to give precision control that prevents damage to pipe's fragile covering.

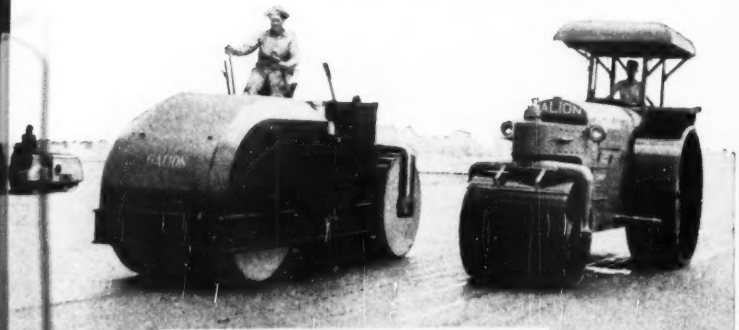


A MERE TURN of one nut tightens two jaws simultaneously on this novel three-part clamp for tubular construction work designed by B.S.F. Pty. Ltd., Melbourne, Australia. Cast in two parts, simple clamp, which grips two members at right angles at same time, has proved most useful in tubular scaffolding supporting steel frame work for casting concrete walls. McGraw-Hill World News Photo

(Continued on page 116)

PIPE-HANDLING GANTRY, capable of hauling 48-ton load up 41-deg. slope, operates on rails to place 40-ft. long sections of steel penstock at Bridge River power plant of British Columbia Electric Co. Penstock 2,100 ft. long has outside diameter of 75⅝ in. Gantry straddling penstock is pulled up slope by cable from hoist at upper end of line. Penstock sections weighing 30 tons are raised and lowered by hand winches, one on each end. General contractors are Northern Construction Co. and J. W. Stewart, Ltd.

Galion Performance Pays Off!



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HOW THEY DID IT

(Continued)

LONG REACH on boom of 20-ton Lorain moto-crane enables Belger Cartage Co. of Kansas City, Mo. to hoist air-conditioning equipment to seventh floor of First National Bank Building. Boom is 100 ft. long and is extended by 15-ft. tip.

FOUR-YARD END DUMP TRUCKS were converted into 25-bbl. cement trucks, on Corps of Engineers' Algiers Lock in Louisiana, by welding a watertight roof in place, equipped with a manhole for loading. Endgate was welded shut, baffles were welded in rear corners of truck body and a sliding door installed over a 12x12-in. discharge hole cut in endgate. Contractors are Stevens Bros. and Miller-Hutchinson Co.

(Continued on page 118)

"Low Over-All Costs With My BLUE BRUTE Teams,"

Says Jim Slattery

Here are facts — not promises — about how Blue Brutes cut construction costs. Mr. James M. Slattery, of the nationally known Slattery Contracting Co., Inc., Woodside, N. Y., writes:

"We have found that Blue Brutes are dependable performers. The portable compressors require very little maintenance and their cost of operation is low.

"On the job at 51st St. and Fifth Ave., drilling and blasting of considerable accuracy were required. The UMW-40 Wagon Drills were fast drilling, easy to handle and produced work of unusual precision.

"All our compressors and air tools are used on a wide variety of jobs under vastly different conditions. We have learned we can rely on Blue Brutes to give us satisfactory performance on any drilling job."

Once again you can be selective in buying construction equipment — can refuse to accept anything but top quality and immediate delivery. Get further facts proving *there's more worth in a Blue Brute* from your nearby Worthington-Ransome Distributor, or write us direct.

H9-1

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Worthington Pump and Machinery Corp.
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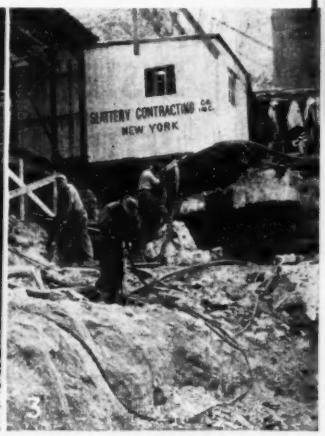
Distributors In All Principal Cities

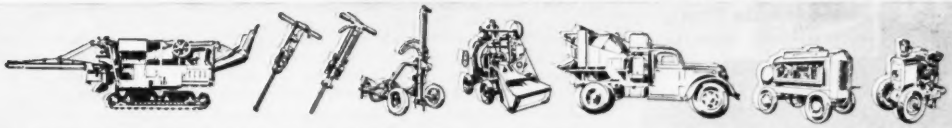
BUY BLUE BRUTES

BLUE BRUTE TEAM-MATES AT WORK ON MANHATTAN'S BEDROCK

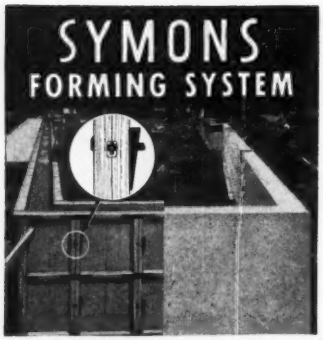
Line-drilling for the foundation of the 19-story Crowell-Collier Building at 51st St. and Fifth Ave., N. Y. C., cut down 30 ft. through rock. Photos show part of the Worthington Blue Brute equipment used by the Slattery Co., for the extremely accurate drilling required on this location. (1) Two Blue Brute 500′ Portable Compressors deliver a steady supply of air through their easy-breathing Feather*Valves. (2) One of the UMW-40 Blue Brute Wagon Drills — fast, powerful drilling machines that swing into action at any angle. (3) Two of a battery of Blue Brute Hand-Held Rock Drills — hard slugging, precision balanced, easy handling WJ-55's.

*Reg. U. S. Pat. Off.





IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB



SAVES TIME

Inset shows how Symons System saves time in erecting and stripping forms. Bolt passes through 2 x 4 studs and tie loop. Wedge secures the assembly. This simple device cuts forming time 50%.

SAVES LABOR

Harry G. Dehring, Foreman, Taylor Brothers, South Bend, Ind., states "Seven men set up the forms for a 26' x 27' foundation in one hour and fifteen minutes."

SAVES COST

With Time and Labor cut in two . . . Plus savings in nails, spreaders, walers and bracing . . . Plus far greater reuse of forms . . . Costs drop to a new low.

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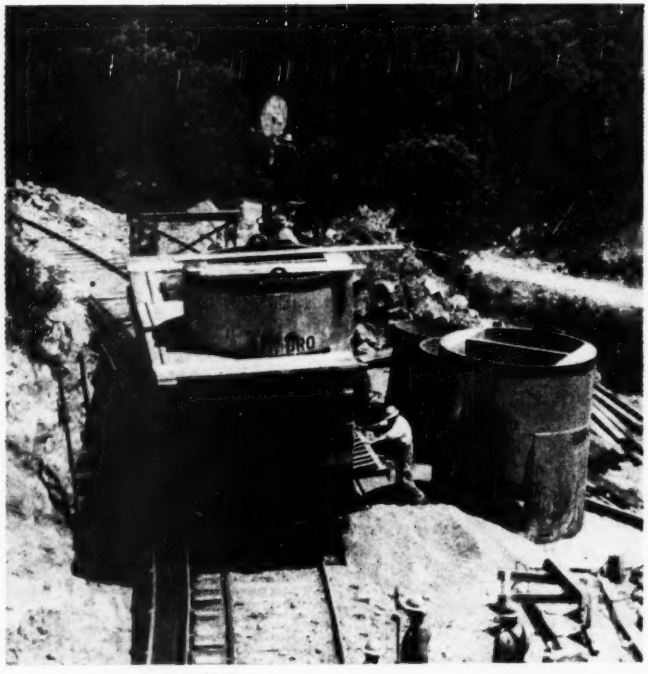
HOW THEY DID IT . . . Continued

DOUBLE DUTY on winter road maintenance project in Arapahoe County, Colo., is performed by this Four-Wheel-Drive truck, equipped with under-body blade, which first hauls resurfacing material from gravel pit and then after depositing it on road-bed spreads and levels it off with blade to smooth surface.



SPECIAL TWIN-COMPARTMENT 8-yd. Gar-Bro concrete buckets are hauled from concrete mixing plant to cableway, at Narrows Dam near Murfreesboro, Ark., in a two-compartment transfer car pulled by a Baldwin-Westinghouse electric locomotive operating on circular track and fed by 250-v. drag cable. Both 4-yd. compartments of bottom-dump bucket can be dumped individually or simultaneously, using an air line in forms to operate dumping mechanism built into bucket. Narrows Dam is Corps of Engineers flood-control and electric power project being built by Arundel Corp., Baltimore, Md. and L. E. Dixon Co., San Gabriel, Calif., joint venturers.

QUESTION:
What manufactured product actually costs the workingman less today than in 1939?

ANSWER:
CEMENT

Today the average production worker in manufacturing industries earns 130% more each week than he did in 1939. His raise in pay is nearly *triple* the 46% increase in the wholesale price of cement during the same period.

This comparison is based on official reports from the U. S. Bureau of Labor Statistics as of December, 1948. Figure it your way—figure it *any* way—and you'll find it's true. Cement costs less today. Cement is *cheap*.

Today, more than ever, cement is your best buy!

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PORTLAND CEMENT COMPANY
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Cumberland Cements

For those rough, tough power jobs

HERE'S A NEW, COMPACT

WICO *heavy duty magneto*

No matter how many hours of continuous service you need . . . no matter how much dust or dampness . . . your engine will get the regular, hot spark it needs from this WICO Model XHD magneto. It's a *new* magneto, designed to do the hard work you need done. It's compact. The molded, insulated coil is stronger so there's less chance of breakdown. This solid plastic case is far tougher than a tape winding. A specially made bronze bushing and ball bearing, lubricated for life, insure trouble-free service. The large — 3/16" — tungsten contacts resist fouling and wear longer. Built-in impulse coupling. On flange-mounted models, a Buna-N oil seal prevents leakage. Available for 4 or 6 cylinder engines, flange or base mounted.

This *new* WICO Model XHD is the finest magneto available for engines operating in continuous service under the most adverse conditions that require ignition units of exceptional stamina and ruggedness.

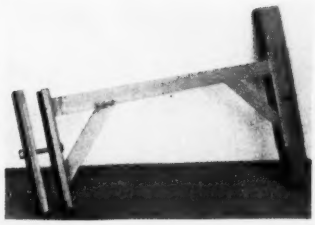
If you've had ignition trouble, chances are this economical WICO XHD will change that. Ask your equipment dealer, or one of WICO's more than 2,000 authorized service stations. Wico Electric Company, West Springfield, Massachusetts.

SINCE 1897

WICO

DEPENDABLE IGNITION

Something New in Scaffolding



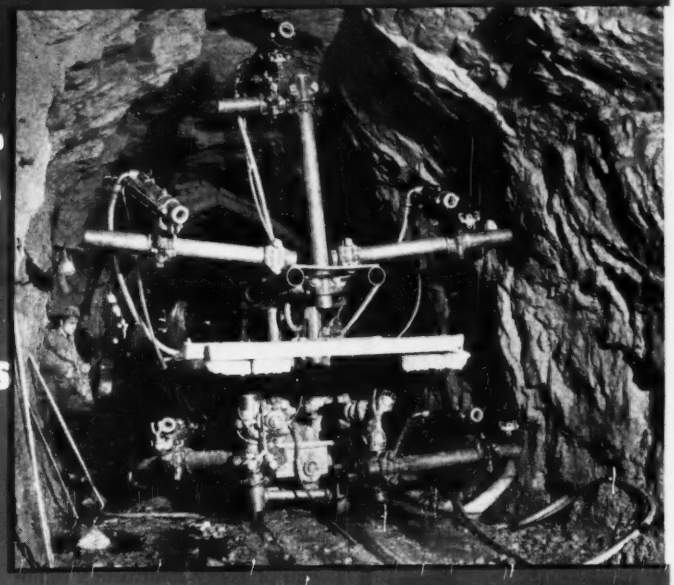
KEY to new combination wood and steel scaffolding is this ledger-clamp unit. Brace ledger is knee section and clamps are two bolted channel sections which attach to uprights

AN EXTERIOR SCAFFOLDING of wood and steel, combining the best features of both, is now being manufactured in Los Angeles. Key to the new structure is a steel knee-brace ledger welded to channel section clamps which are bolted to wooden uprights. Eliminating most of the carpentry work while retaining the flexibility of wood scaffolding, it is reported to cost only one-fourth as much as regular steel scaffolding. Cross-braces and guard rails are installed with U-clamps, only nails required being for tie-in to the building. Uprights can be cut or spliced to any length to fit ground contours, and scaffolding can be reinforced to desired strength. R. K. Squire, owner of the Superior Scaffolding Co. of Los Angeles, holds patents on the apparatus.

INVENTOR, R. K. SQUIRE, Los Angeles engineer and owner of Superior Scaffolding Co. New system eliminates most of nailing of straight wood scaffolding and costs considerably less than all-steel structure.

GARDNER-DENVER CALLS THE ROLL

OF AMERICA'S BIGGEST TUNNEL JOBS



Gardner-Denver CF 89H Drifter

Wherever they are . . . in whatever type rock . . . tunnels get drilled faster—and at lower cost—when you use Gardner-Denver Continuous Feed Tunnel Drills. That's why these drills are preferred on so many tunnel projects all over the country. *Fast*—the drill feeds itself exactly in accordance with the character of the ground—requires no manual adjustment. Maintenance costs are lower, too. The built-in feed motor dampens vibration—is easy on the set-up, extremely low in air consumption.

For complete information, write Gardner-Denver Company Quincy, Illinois

GARDNER-DENVER SINCE 1859

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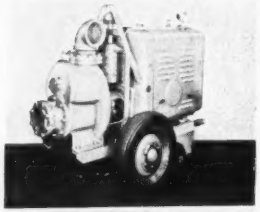
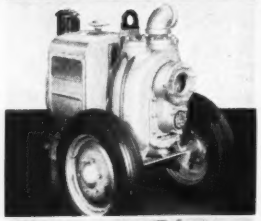
CMC DUAL PRIME
THE LAST WORD IN PUMP DEPENDABILITY





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●Non-clogging, open thrash type impeller handles solids up to ¼ intake size.
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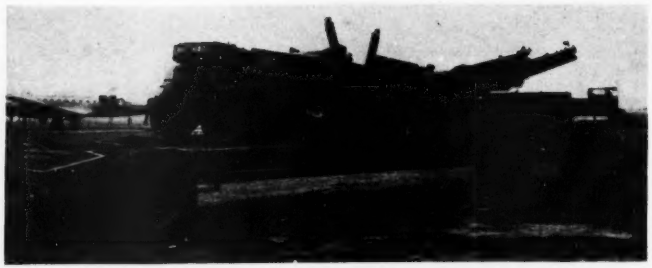
CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA



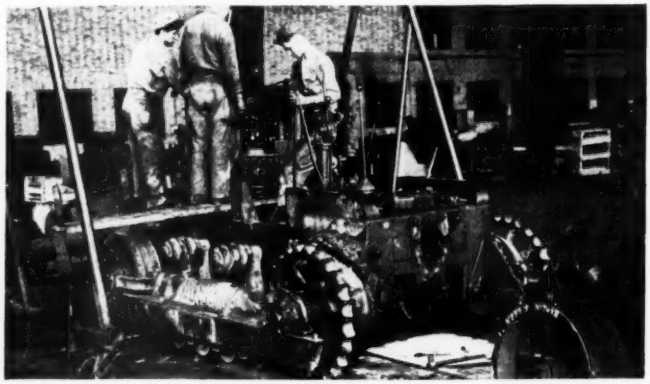
TIED TO 20-TON low-bed trailer at Frankfurt's Rhein-Main airbase, three Caterpillar D-7 tractor frames await shipment to Berlin in C-74 Globe-master.

Big Rigs Cut Up for Berlin Airlift

McGraw-Hill World News

THE PROBLEM was to obtain quick easy loading and proper load distribution in the shipment of 590 tons of heavy construction equipment into Berlin by airlift. The answer was disassembly, both mechanical and by acetylene torch cutting. It was not quite that easy, however, as Col. M. G. Martling, Commanding Officer at the U. S. Army's Hanau Engineering Depot near Frankfurt will testify. Equipment sent by air from Hanau, the principal source of engineering supplies in the European Theater to Berlin, includes complete rock crushing and screening plants, D-7 and TD-14 tractors, graders, asphalt distributors up to 1,250-gal. capacity, road rollers, 8-yd. scrapers and all sizes of generators. In all, the Army Engineers flew in 85 pieces of equipment urgently needed for additional runway construction at Tempelhof and for the new Tegel airbase.

Even when carried in giant C-74 Globemasters (over-all capacity 20 tons) and C-82 "Flying Boxcars," all heavy equipment except generators was disassembled, some just mechanically and others both mechanically and by cutting. Carefully marked crated parts and

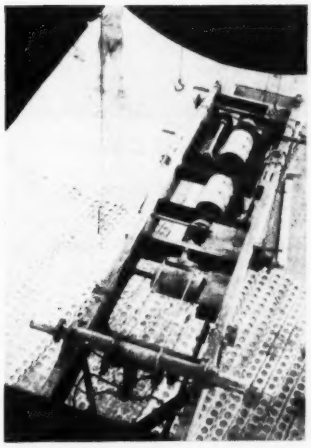


TRACTOR FLOWN IN from Frankfurt is assembled in Tempelhof Airport hangar for use in building new runways.

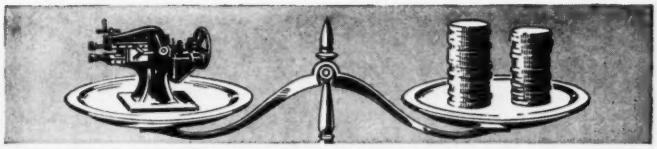
TONGUE CUT from front wheel yoke of scraper is realigned for joining by electric welding. V-shaped cuts facilitate realignment.

minor assemblies were shipped in C-54's. All acetylene cuts were V-shaped to facilitate easy realignment. Rejoined in Berlin by electric welding, cut members were reinforced with fishplates. Care was taken not to cut sections subject to extremely high strain, such as portable rock crushing and screening plant frames, when they could be loaded in one piece. All equipment subjected to cutting

(Continued on page 126)



STRIPPED CHASSIS of 32,000-lb. screening plant is hooked to elevator cables for loading in C-74. Because of great strain they must endure, these large frames are not cut for shipping.



Do you know the actual cash value of your machinery?

Probably not . . . unless you've had an appraisal made lately.

Yet, it's important to weigh and record these values periodically (1) so that you will know what is adequate insurance protection for your machinery investment and (2) so that you will have the information, in the event of a disaster, to present in support of a claim. Such information is required by all insurance companies. Look at *your* policy!

The Hartford has just produced a machinery inventory booklet entitled "Your Machinery and its Actual Cash Value." It contains simple examples and forms which illustrate a correct method of arriving at values for insurance purposes.

"Book" values are not actual cash values!

Charging off a fixed percentage (based on the supposed useful life of a machine) to depreciation year after year . . . will not show the machine's *actual cash value.*

In most cases, the *actual cash value* of a machine is considerably higher than its "book" value. That's why, to avoid underinsurance . . . and perhaps a large financial setback, it's vitally important to insure your *actual cash values.*

Weigh *your* values carefully! Send the coupon below for the booklet "Your Machinery and its Actual Cash Value." A copy will be sent without obligation to any machine owner requesting it. For insurance advice, see your Hartford agent or broker.

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Payloaders Speed Concrete Work!

SAVES 50 MANHOURS PER HOUSE. Model HF Payloader delivering concrete from mixer to footing and wall forms.

STREET PAVING. HL Payloader delivers concrete from paver to forms for side lane of new street.

FEEDS CONCRETE MIXER. Model HA Payloader feeds gravel to concrete mixer with great savings in time and labor.

Hauling and pouring concrete, handling aggregate, charging pavers and mixers are a few of the many jobs that make Payloaders a profitable investment. They also pay their way excavating, leveling, grading, carrying, loading and handling *any* bulk material.

Payloaders are built for construction jobs . . . big, powerful, fast . . . with large pneumatic tires, wide speed range, quick-acting forward-reverse control, fingertip hydraulic control that raises, lowers, dumps and closes the bucket . . . complete visibility for the operator, low height, great stability and balance. There's a size of Payloader for every job: the 10½ cu. ft. Model HA; the ¾ yd. HF; the 1¼ yd. HL; the 1½ yd. HM. Get the complete facts from your Hough Payloader distributor or write The Frank G. Hough Co., 706 Sunnyside Avenue, Libertyville, Illinois.

PAYLOADER *Advantages*

- **Automatic Bucket Tip-back**
- **Hydraulic Bucket Control**
- **Several Speeds Forward and Reverse**
- **Quick, Easy Forward-Reverse Control**
- **Large Pneumatic Tires for Maximum Traction and Flotation**
- **Full Operator Visibility**
- **Low — Compact — Sturdy**

HOUGH
PAYLOADER
Manufactured by THE FRANK G. HOUGH CO.

Barber-Greene

Faster..Lowest Cost per Ton..
One-Man Operation

The versatility and one-man usefulness of B-G Portable Belt Conveyors offer almost unlimited possibilities for cutting the cost per ton handled — speeding up loading, unloading, stockpiling and conveying operations wherever they're put to work. These modern high-capacity conveyors handle all materials—stone, sand, gravel, coal, coke, ashes, bulk chemicals, bagged or boxed material — even wet concrete. Available in many sizes (lengths from 25' to 60'; belt widths from 18" to 30") with advanced features that include highly portable, pneumatic-tired wheel trucks, lighter, stronger frames, V-belt drives and speed reducers—no chains or sprockets—and 100% anti-friction bearings. Use the coupon or see your B-G distributor for full information. Barber-Greene Company, Aurora, Illinois.

Unloading-loading cars, trucks

Multiple setups for unloading-loading, conveying bulk or packaged material.

Fast, easy towing

New Literature Describes New Advantages of the B-G Portable Conveyors

USE THIS COUPON

B G *Constant Flow Equipment*

BARBER-GREENE COMPANY
AURORA, ILLINOIS

BARBER-GREENE COMPANY • AURORA, ILLINOIS

☐ Send new literature on B-G Portable Conveyors.

☐ Have distributor get in touch with me.

Name_____

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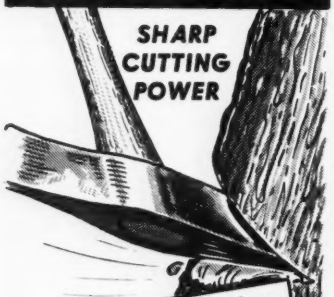
City_____ Zone____ State_____

FOR
SPLITTING WOOD...



for Driving Piles..
BATTERING
POWER

WARRINGTON-
VULCAN
Single-Acting Steam
PILE HAMMERS

In solving your pile driving problems, consider these facts about Warrington-Vulcan.

- **Simple Design**
- **Built-in Strength**
- **Positive Action**
- **Medium Steam Pressure**
- **Moderate Frequency of Low Velocity Blows From a Relatively Heavy Ram**
- **Easy Operation**
- **Trouble-Free Performance**
- **Low Cost Operation**
- **62 Years of Successful Performance**

This durable hammer is designed to meet requirements set up by experienced contractors. Write for complete details and the name of your nearest distributor.

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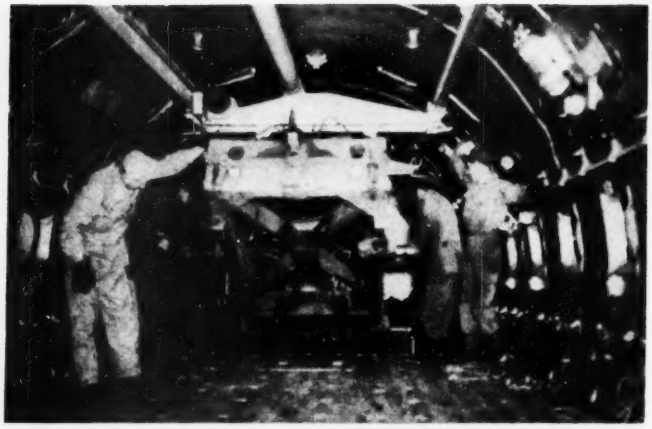
331 North Bell Avenue
Chicago 12 ---Illinois



ONCE IN PLANE, load is manhandled into position. Frames of both crushing and screening units are taken in same flight. Only C-74's can carry these pieces.

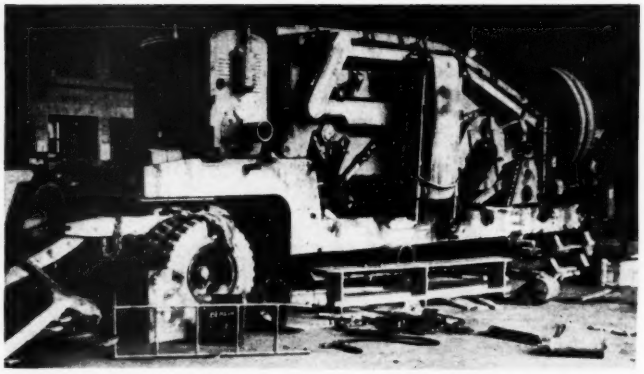
(Continued from page 123)

thus far has stood the gaff of hard round-the-clock operations and engineers expect no difficulties.

Some units such as 12,000-lb. crusher jaw assemblies were hard to handle because of the great weight concentration. These were carried two at a time in C-74's. The load was then balanced with other equipment. Bulky units, such as scrapers, required much cutting, but more compact asphalt distributors and Buffalo-Springfield tandem rollers were mechanically dismantled. Engines for most

←

SIDE IS WELDED to pan bottom of scraper at Tempelhof. Bulky scrapers required most acetylene cutting of all equipment shipped. Re-welded tongue section is seen above welder.



SCREENING UNIT in final stage of re-assembly at Tempelhof hangar. This and 84 other pieces of heavy construction equipment comprise total of 590 tons handled by Army engineers in Berlin airlift.

larger units were unbolted and crated with heavy timber. Pulling the dead axles from tractor transmissions was often a problem. When 100-ton jacks failed, holes were drilled in the transmission and mechanics pushed the axles out with high-pressure grease.

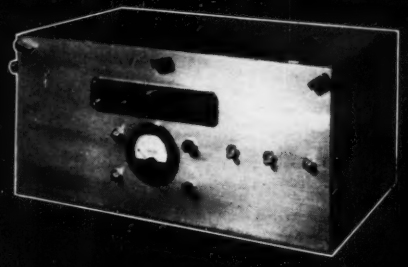
Regular elevators in C-74's not suitable for lifting heavy awkward equipment parts were removed so that pieces could be loaded directly by elevator cable. In the plane, cargo was manhandled into position. Elevators were connected only for the final load on each flight, closing the bottom of the plane. Equipment was off-loaded from 20-ton low-bed trailers parked under the belly of the Globemasters. Clever G.I. crane operators loaded C-82's through wide rear openings with horizontal booms.

Concrete Plant for Narrows Dam

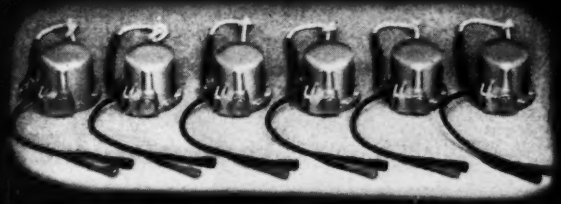
DEPENDABLE CONCRETE PRODUCTION of 100 cu. yd. per hr. is assured in this automatic batching and mixing plant for the Narrows Dam near Murfreesboro, Ark. All new equipment, except the two 4-yd. stationary tilting mixers which were used originally on Boulder Dam, the plant includes a Johnson Octo-Bin holding 400 yd. of aggregate and 500 bbl. of cement, a complete set of Johnson automatic batching equipment together with automatic weight recorder, bucket elevator, and a 4,850-bbl. Consolidated Steel Corp. cement silo. Contractors on this Corps of Engineers' flood-control and power dam are the Arundel Corp. of Baltimore and L. E. Dixon Co. of San Gabriel, Calif.

Century

PORTABLE REFRACTION SEISMOGRAPH



For use where first arrival information only is needed. Designed specifically for accurate determination of water table or depth of bed rock for dam sites, buildings and other major construction projects. Applicable for sounding of ice depth and other geophysical exploration purposes. Units consist of Century Portable Oscillograph, Attenuator Panel in all-aluminum case and six Seismometers. All units are waterproof and designed for portability.



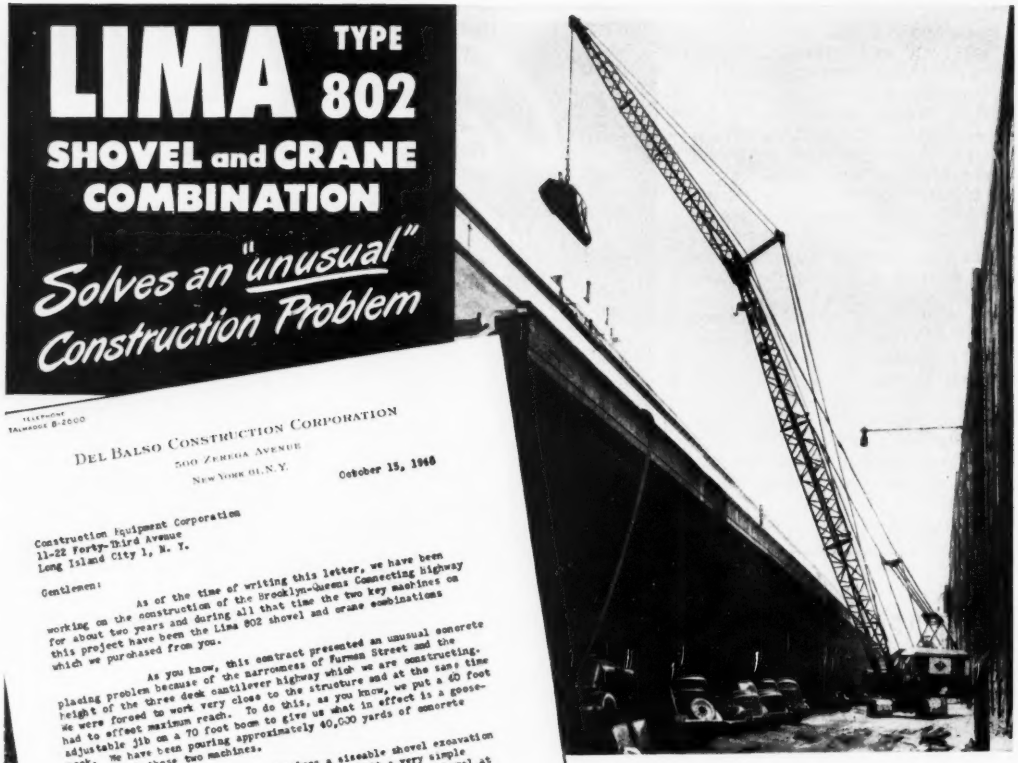
Write for detailed information applicable to your particular problems.

ANOTHER Century PRODUCT

Century GEOPHYSICAL CORPORATION
TULSA, OKLAHOMA
149 Broadway, New York

LIMA TYPE 802 SHOVEL and CRANE COMBINATION

Solves an "unusual" Construction Problem



TELEPHONE
TALMADGE 8-2000

DEL BALSO CONSTRUCTION CORPORATION
500 ZEREGA AVENUE
NEW YORK 61, N.Y.

October 15, 1948

Construction Equipment Corporation
11-22 Forty-Third Avenue
Long Island City 1, N. Y.

Gentlemen:

As of the time of writing this letter, we have been working on the construction of the Brooklyn-Queens Connecting highway for about two years and during all that time the two key machines on this project have been the Lima 802 shovel and crane combinations which we purchased from you.

As you know, this contract presented an unusual concrete placing problem because of the narrowness of Furman Street and the height of the three deck cantilever highway which we are constructing. We were forced to work very close to the structure and at the same time had to effect maximum reach. To do this, as you know, we put a 40 foot adjustable jib on a 70 foot boom to give us what in effect is a goose-neck. We have been pouring approximately 40,000 yards of concrete to-date with these two machines.

Our contract also involves a sizeable shovel excavation job which had to be done sporadically. We found it a very simple operation to change one of these machines from a crane to a shovel at very short notice.

In addition, during the past two years we have not shut the machine down at any time for repairs due to breakdown or mechanical failure.

We have been most pleased with the performance of these rigs and their adaptability to meet a special and very difficult situation.

Very truly yours,

DEL BALSO CONSTRUCTION CORPORATION

On this job, the crane operator had to work "blind" most of the time. Traffic had to be maintained, ruling out gantry-type cranes. Heavy equipment was barred in this residential area. The only effective way to place concrete and other materials was with a crane that combined the ultimate in *flexibility* and *capacity*. LIMA 802's did the job perfectly!

Machine illustrated has 70 ft. boom, 40 ft. jib and 2 yard bucket. Note that clearance at rear of machine and front of boom is practically nil.

The two standard LIMA 802 combination machines owned by Del Balso have worked safely—under UNUSUAL conditions—for two years without "down-time"—a tribute to their tremendous reserve of lifting power and capacity. The LIMA line includes Shovels ¾ to 6 yds., Cranes 13 to 110 tons and Draglines variable.

It will pay you to consult your nearest Lima Sales Office or representative before you buy your next shovel, crane or dragline. Offices in principal U.S. cities.

Lima Shovel and Crane Division

LIMA, OHIO

OTHER DIVISIONS: *Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.*

LIMA HAMILTON CORPORATION

PARK FOREST *Picks* DUMPCRETES

Park Forest Homes (a city-to-be of 30,000 near Chicago) picked a reliable contractor to furnish its 150,000 yards of concrete. And Corbetta Construction Company picked a reliable concrete body—the Dumpcrete—to place it.

Corbetta's on-the-job mixing plant and seven Dumpcretes *average* 1750 yards per week!

Every yard of this air-entrained concrete meets rigid specifications. No extra air is whipped in by the non-agitating Dumpcretes on the way to the pour. Top-to-bottom, load-to-load uniformity is the rule.

THIS IS THE DUMPCRETE — the concrete body that placed 1½ million yards last year. The lower cost Dumpcrete is lightweight, watertight, with 13-foot chute, controlled higher discharge and lower center of gravity. Users report savings up to $1.00 a yard. Hauls sand, gravel and earth too.

High-discharge Dumpcrete pours directly into lay-down bucket.

★

Why did Corbetta pick the Dumpcrete? . . . They wanted speed, low cost and a body that would do anything. The Dumpcretes load fast and dump fast. They haul hour after hour, day after day without downtime or expense. With their *extra high* discharge they place directly into buckets; or chute 13 ft. for foundations, footings, walks and streets.

You can have speed, economy and flexibility on your next job too . . . whether it's *big* or *small*. The low-cost Dumpcrete is the answer. Get proof . . . send for the facts today.

Send me booklet "Contractors Pour Faster, at Lower Cost."

Name_____

Firm_____

Address_____

DUMPCRETE

DIVISION, MAXON CONSTRUCTION CO., INC.

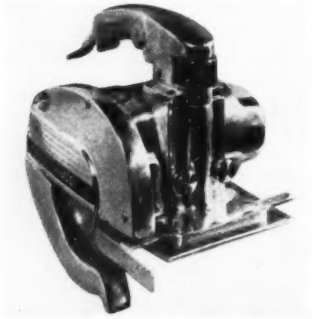
529 Talbott Bldg., Dayton 2, Ohio

CONSTRUCTION EQUIPMENT NEWS

APRIL 1949 REVIEW
of Construction Machinery and Materials

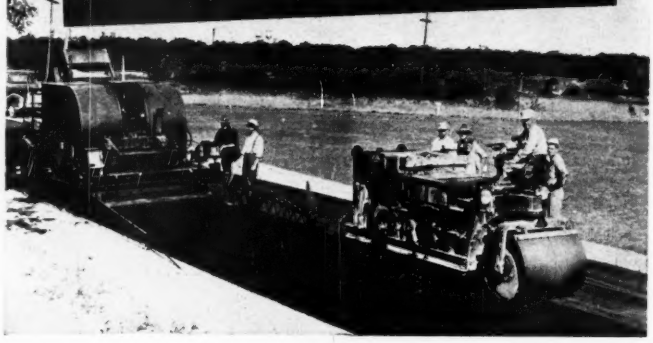
CONCRETE DRILL BIT—Ranging in size from ¼ to 2 in., concrete drill bits are hand-made from high grade steel with heat-treated special carbide cutters set in and brazed to the blunt end of the bit shaft. Blunt end

design of drill bit enables it to drill right through gravel or rounded rocks in concrete without being deflected around them. Bit is claimed to give long operating service without resharpening.—**Rotary Concrete Drill Co., 650 So. Arroyo Parkway, Pasadena 2, Calif.**



PORTABLE ELECTRIC SAW—All-purpose lightweight saw has 6¼-in. dia. blade with a ⅝-in. standard round hole. Depth adjustment can be regulated accurately for any depth from ⅛ to 2 in. Saw is designed for one-hand operation and has trigger switch located on handle. Turbine fan draws air through motor and discharges at front, blowing dust off line of work. Saw blade housing has separate rear discharge outlet so that no dust from blade can work back into motor. Guarded blade is exposed only when it cuts into the wood. Over-all dimensions are 10 in. long, 8⅛ in. wide and 9⅜ in. high. Powered by 115-v. ac/dc motor operating at speed (load) of 3,200 rpm.—**Porter-Cable Machine Co., Syracuse 8, N.Y.**

For Heavy Mixing, Retread and Stabilization Jobs—



The New Heavy-Duty Moto-Paver

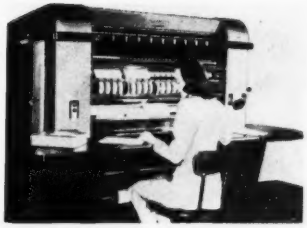
Although developed primarily to meet the rugged conditions of hilly and mountainous terrain, the heavy duty Moto-Paver is proving equally efficient under widely differing conditions in other sections of the country.

Wherever you have a heavy bituminous mixing, retread or stabilization job, it will pay you to investigate this new and more powerful Moto-Paver. It does the *complete mixing* and *laying job—in one continuous operation.* See your local distributor or write direct for specifications and complete information.

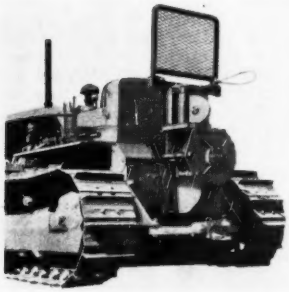
The Moto-Paver is a very flexible as well as a mobile unit. The illustration shows it being used as a stationary mixing plant.

Hetherington & Berner Inc.

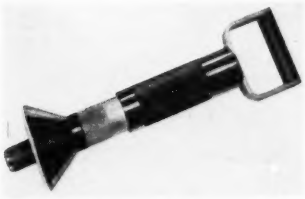
735 KENTUCKY AVENUE, INDIANAPOLIS 7, INDIANA



WHITE-PRINTER—New Volumatic white-printer for large-volume duplicating work in engineering and business offices reproduces anything drawn, typewritten or printed upon translucent mediums at speeds up to 105 sq.ft. per min. Produces positive prints directly from original drawing or document without intermediate steps.—**Charles Bruning Co., 4754 W. Montrose Ave., Chicago 41, Ill.**



SINGLE-DRUM WINCH — Lightweight, high-speed friction-driven winch is designed for use with Caterpillar tractors. Line is led through a 180-deg. swiveling fairlead allowing line to spool on drum without repositioning tractor.—**Hyster Co., Portland 8, Ore.**



EXPLOSIVE FASTENING TOOL—Ramset tool is actuated by a powder charge exploded within the tool to force steel studs or pins into steel, concrete, masonry and other hard materials. Designed to replace conventional drilling or plugging method. Available in two sizes weighing, respectively, 5 and 10 lb. Tool operates instantly with only about 30 sec. required to prepare tool and set fastener in place.—**Stemco Corp., Lucky River, Cleveland 16, Ohio.**

Super-STRONG...
Super-SAFE...

"ALLGOOD CORD"

For Manifold and Caisson Service

Goodall's finest large size air hose . . . especially designed for jumbos, caissons and other heavy-duty applications where reliability and safety are of prime importance. Built to stay on *the job longer* by withstanding continuous abrasive wear and damage from falling rock, tools, etc. KINK-PROOF CONSTRUCTION assures a steady flow of air.

"Allgood Cord" is a "Standard of Quality" product . . . a designation warranted by years of outstanding service in the construction field. Made in 1½" to 4" sizes, in maximum lengths of 50 feet.

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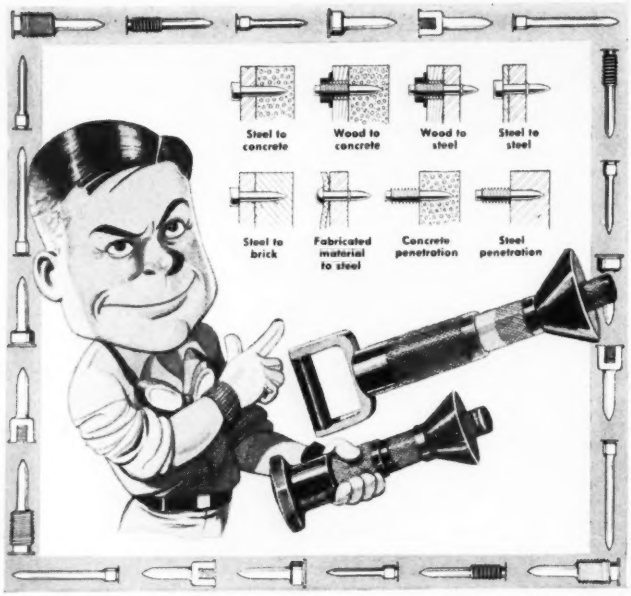


JOE RAMSETTER . . .

the multi-job man!

Fastening jobs like those illustrated are all in a day's work for JOE RAMSETTER. With his light, self-powered RAMSET TOOL, and 63 sizes of pins and studs, he can set up to 50 fasteners per hour, to cut costs and finish the job faster.

No chipping, no drilling, no plugging. No electric or air lines. Prepare the RAMSET TOOL in 30 seconds. Then, place it against the work and RAM! The fastener is set instantly, tightly, easily. We teach any alert, careful workman to "RAMSET", in 30 minutes.

For fastenings in steel, concrete and other hard-to-work materials, RAMSET pays big dividends in time and money. Use the coupon for complete information.

Ramset FASTENING SYSTEM

Stemco Corporation Cleveland 16 (Rocky River), Ohio.

In Canada—Globe Machine Tools, Batawa, Ontario.

Stemco Corporation, CM 4
Cleveland 16 (Rocky River), Ohio

Please send details and arrange for demonstration of RAMSET FASTENING SYSTEM.

Name

Company

Address

MOTO-BUG—New power-wheelbarrow called "Moto-Bug" for handling materials can be equipped with an optional 4-ft. stake platform body that is easily interchanged with 10-cu.ft. capacity hopper body. An optional riding step for the operator has been made available and a dual wheel has been placed on the direct steering mechanism. Machine has capacity of 1,200 lb. and platform body may be tilted for unloading certain kinds of heavy material. Unit is powered by 4-hp. gasoline engine and operates at speeds from 1½ to 4 mph. in forward and reverse direction. Wheels are equipped with traction tread pneumatic tires and width of machine is 33 in.—**Kwik-Mix Co., (Subsidiary of Koehring Co.), Port Washington, Wis.**

DITCHER—New Model 406 Buckeye boom-type utility ditcher digs to 8-ft. depth with fully extended boom. All-welded box section boom telescopes; lower section nests in upper section for 6-ft. digging depth. Machine cuts ditch from 17 to 24 in. wide. Bucket cleaner insures removal of spoil and full bucket loads. Boom is raised or lowered by hydraulic power and machine digs either forward or reverse. Mounted on crawler unit.—**Gar Wood Industries, Inc. (Findlay Division), Findlay, Ohio.**

If you want to move BIG YARDAGE *fast*

your equipment must be rugged!

THAT's a basic requirement. Even if you build it larger, increase its horsepower, make it easier and more convenient to operate, your construction equipment will still not give you *maximum* production unless it has enough "guts" built into it. Unless it has the toughness and strength to safely absorb the grief of high speed operation and heavier loading, it just cannot be operated at top capacity—at least, not for long.

That is why so much of today's high-production earth-moving equipment is built with U·S·S High Strength Steels. With these superior steels you can obtain *all* the properties that assure durability and dependability under tough service conditions. They have a yield point 1½ times higher than ordinary structural steel. They provide greater resistance to shock, impact, vibration and fatigue. They have greater abrasion resistance . . . they can provide high resistance to atmospheric corrosion. In addition they have good formability, they are readily weldable—and they are low in cost.

To help you use these steels most efficiently we can place at your disposal a wealth of practical engineering and fabrication data, based on more than 12 years' experience in applying U·S·S High Strength Steels in construction equipment famous for its stamina and performance.

Write for complete information.

BEAT THE STEEL SHORTAGE

— use steel that DOES more!

By replacing carbon steel with U·S·S COR-TEN or MAN-TEN where economically applicable, you can:—(1) Produce as many as one-third more units from every ton of steel used. (2) Make better products—lighter, longer-lasting and generally more profitable to the user. (3) Satisfy more customers. (4) Get these benefits at little or no increase in cost per unit.

To help you use U·S·S High Strength Steels to advantage in *your* products, immediately—and with the least change in shop methods—we have a special staff of metallurgists and engineers thoroughly familiar with what these steels can do. Phone, wire or write our nearest office.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

8-1302

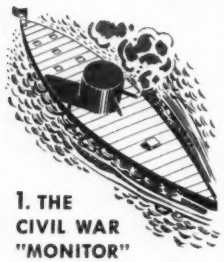
USS

U·S·S HIGH STRENGTH STEELS

U·S·S COR-TEN · U·S·S MAN-TEN · U·S·S MANGANESE-NICKEL-COPPER

UNITED STATES STEEL

FAMOUS EXAMPLES OF ARMORED CONSTRUCTION



1. THE CIVIL WAR "MONITOR"

Extended, heavy steel side plates protect sheaves
Heavier pins and axles
Tough stee reinforcing straps
Oversize forged steel hook and shackle

2. AMERICAN DIAMOND SHELL BLOCK

9301

Dropped, slammed and battered on the job, blocks and sheaves have to be *tough!* Compare AMERICAN *"armored construction"* . . . see why these blocks and sheaves serve better, last longer. Many types, all sizes, from 1½ to 250 tons, for wire rope only. Sold by distributors everywhere. Made by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minn.

ALSO MAKERS OF THE AMERICAN HANDIWINCH AND GENUINE CROSBY CLIPS

ASK FOR AMERICAN BLOCKS AND SHEAVES

RICE PUMPS *Have Everything* for Dependable Pump Performance!

Every RICE PUMP carries an A.G.C. Rating Plate.

RICE self-priming centrifugal pumps embody *proven* developments in pump design . . . features that set high standards in centrifugal pump performance:

- **AUTOMATIC PRIMING** — simply fill pump body and start engine. Pump primes automatically thereafter.
- **DIRECT LINE FLOW** — liquid flows through suction opening to impeller in direct line. Large openings, no sharp turns, minimum friction.
- **SUCTION CHECK VALVE BUILT-IN** — holds liquid in pump for re-priming. No foot valve needed in hose.
- **SELF-LUBRICATED SHAFT SEAL** — Biggest improvement in pump seals in a decade. Entire seal enclosed in welded, pressed steel cartridge. Quickly and easily replaced.
- **NON-CLOGGING IMPELLER and WEAR-PLATE** — Rice Pump impellers are of the open type; handle liquids with a high percentage of solids. Hardened steel wear-plate and impeller replacable when worn.

10 M

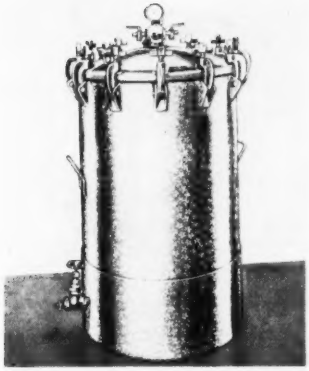
Write for New Illustrated Bulletin on 2", 7M and 10M models, the two most popular sizes of centrifugal pumps for the construction and oil field industries.

RICE PUMP & MACHINE CO.
Division of Milwaukee Chaplet & Mfg. Co.
1053 S. 40th St., Milwaukee 4, Wis.

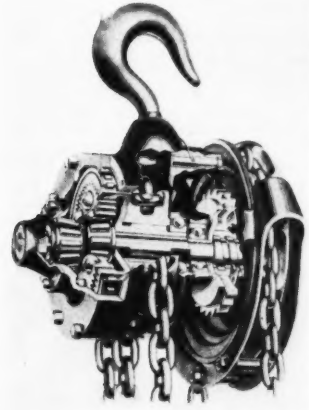
RICE *Self-Priming* CENTRIFUGAL PUMPS

STRADDLE TRUCK—Model M of 18,000-lb. capacity, replacing a 12,000-lb. truck has forward sloping hood to increase driver visibility. Operating on pneumatic tires and having four-wheel hydraulic brakes truck is powered by 6-cylinder, 82-hp. engine and has four speeds forward and back. May be geared for maximum speeds of from 30 to 45 mph. according to requirements. Spring suspension system insures better riding and steering, gives more traction for driving wheels, reduces frame stress and tire wear and facilitates travel over slippery or rough road surfaces. Without a load the straddle truck has an average turning radius on level ground of 12¼ ft. Positive acting automatic stop prevents over-run of the worm gear-driven roller-chain hoisting and loading mechanism. Standard model is equipped with mechanical swinging shoe control, although vacuum and automatic controls are available as optional equipment to suit conditions of operation.—**Hyster Co., Portland 8, Oregon.**

PORTABLE ELECTRIC SANDER—Weighing only 4¾ lb., new sander features non-stalling high speed electric motor encased in aluminum alloy housing. Dimensions are 4 in. high, 9 in. long, and 3 in. wide. Uses one-third of a standard 3x11-in. abrasive sheet; several abrasive sheets can be loaded at one time. Operates on "orbital motion" sanding action principle.—**Sterling Tool Products Co., 1340 Milwaukee Ave., Chicago 22, Ill.**



PRESSURE TANK FOR SPRAY PAINTING—Standard tanks ranging in capacity from 2 to 60 gal. have seamless drawn steel shells and are galvanized, inside and out. Designed to handle working pressures up to 110 psi. Steel bands welded to concave bottom provide solid support. Cadmium-plated pressed steel lids are secured with C-type clamps. Tanks are available with manual- or motor-driven agitators.—**Binks Mfg. Co., 3122 Carroll Ave., Chicago 12, Ill.**

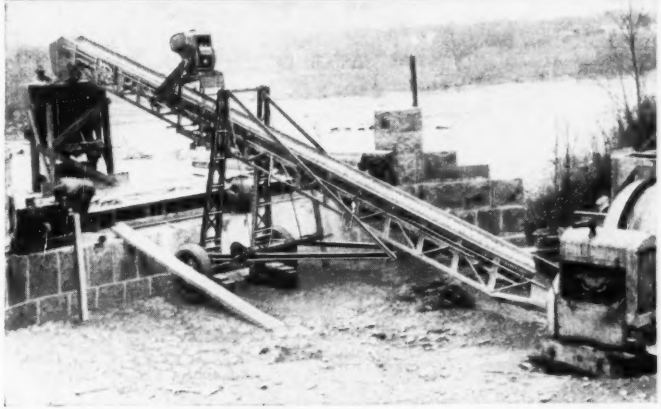


LIGHTWEIGHT HOIST—Feature of Auto-Bloc lightweight, heavy-duty hoist is simplified hoisting mechanism employing only two gears and making possible substantial weight savings. Gears are a cam-actuated floating inner gear and an outer gear to which the load sheave is rigidly connected. Each pull on the hand chain causes cam shaft to revolve, actuating the floating inner gear. Cover is unbreakable, drop-forged from chrome manganese steel. Available in 16 standard models of ½- to 40-ton capacity.—**David Round & Son, Cleveland 5, Ohio.**

Farquhar Trough Conveyor

SPEEDS UP HANDLING

of Concrete Mix



ON a giant Mississippi River bridge construction job this Farquhar Model 343 Trough Conveyor completely *eliminated* the need for carrying wet concrete in wheelbarrows . . . released four men from materials handling for other work! Materials handling expenses were *slashed to the bone*, expensive manpower was conserved for actual construction work! In this case, concrete was fed from a one-cubic-yard mixer to the 18-inch, 50-foot Farquhar Conveyor *fast enough* to deliver sufficient concrete to keep the crew completely busy!

For All Handling Jobs

General-utility Farquhar Trough Conveyors handle sharp or abrasive materials, fine or powdery materials, small bundles or bags, *faster, better, cheaper* than old-fashioned and more expensive handling methods. Contractors, chemical plants, coal yards, warehouses, *all industries*, turn to Farquhar for the right answers to specific handling problems. Farquhar offers a complete line of conveyors for portable, semi-permanent or permanent use, handling all kinds of loose or packaged materials. Tell us your problem—we have the know-how to help you.

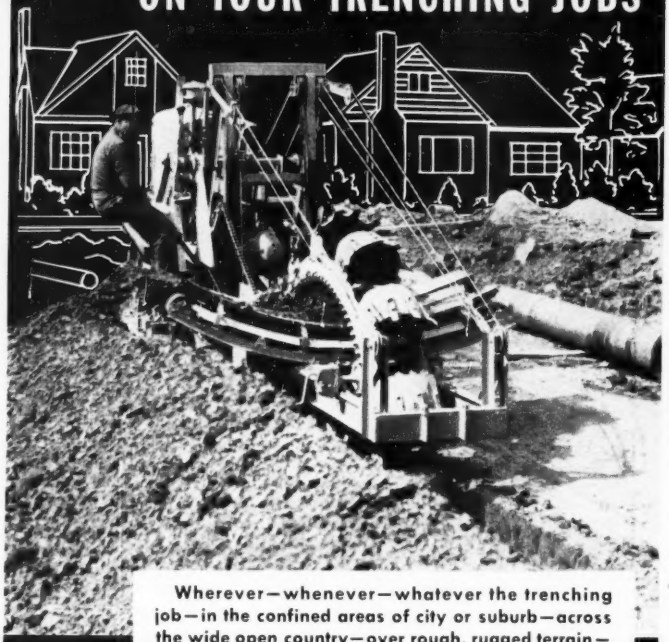
Write A. B. FARQUHAR CO., *Conveyor Division*, 222 Duke St., York, Pa., or 622-A W. Elm St., Chicago 10, Ill., for free information.

Farquhar
PORTABLE OR PERMANENT MATERIALS HANDLING
CONVEYORS

HYDRAULIC PRESSES · FARM EQUIPMENT · FOOD PROCESSING AND SPECIAL MACHINERY

CLEVELANDS

CONSTRUCTION & ENGINEERING GIVE *Top Performance* ON YOUR TRENCHING JOBS

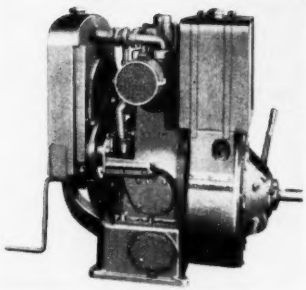


Wherever—whenever—whatever the trenching job—in the confined areas of city or suburb—across the wide open country—over rough, rugged terrain—through sticky gumbo, rocky ground or sandy soil—in the intense summer heat or cold stormy weather—CLEVELANDS have delivered outstanding performance on thousands of projects for more than a quarter of a century.

And the reason why you can always depend on CLEVELANDS for the maximum trench yardage obtainable, no matter what the conditions, is evidenced in their correct, compact wheel-type design, superior quality construction and fine engineering. A balanced combination of practical features that accounts for their better performance, that prompts enthusiastic praise from owners everywhere. Ask your nearest CLEVELAND owner for proof of performance and see your CLEVELAND distributor for specifications.

THE CLEVELAND TRENCHER CO.

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO



NEW 10-HP. DIESEL ENGINE—New diesel engine of 10 hp. is heavy-duty vertical type, four-cycle, single-cylinder mechanical injection engine. With 4½-in. bore and 5¼-in. stroke, engine is rated at 10 hp. at 1,200 rpm. and 15 hp. at 800 rpm.; 10-gal. tank provides sufficient fuel for 12 hr. of operation at full load. Full pressure lubrication is provided to bearings. Impeller type cooling water pump, belt-driven from crankshaft circulates water from radiator to cylinder block. Fuel injection pump delivers fuel at high pressure through extra-heavy steel tubing to injector nozzle in cylinder head. Engine is offered for hand starting—with 12-v. electric starting available as optional equipment.—**Nordberg Mfg. Co., Milwaukee 7, Wis.**

DIESEL FUEL ADDITIVE—Gum-out is the name of a new additive for diesel fuel and heating oils, designed to dissolve gum and sludge, thus cleaning fuel lines and injection system. Maintains a continuous free flow of fuel to the engine and prevents clogging of jets and burners.—**Pennsylvania Refining Co., 2686 Lisbon Road, Cleveland 4, Ohio.**

SAFETY HOIST HOOK—Hooks are drop-forged for maximum strength and reliability. Automatic mousing action with a safety-tie lip lock holds point of hook and prevents sling from slipping off. Safety-tie mousing automatically engages as the load is applied and disengages when load is released. Available in two sizes, 5-ton and 10-ton. Both sizes are available in two styles with eye bridge or with shank bridge.—**Brewer-Titchener Corp., Cortland, N.Y.**

"faster construction" it's a cinch with TULSA WINCH

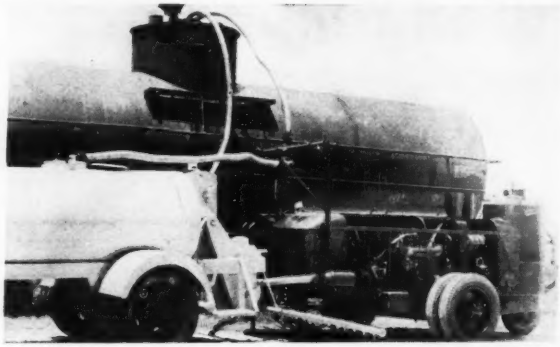
This winch, especially designed for utilities, has extended drum shaft, detachable cathead, and adapter. Write for literature.

Jobs are handled with ease, more speed and positive assurance with a Tulsa Winch. Hoist, pull, lift and move all types of machinery and materials with a Tulsa Winch. Loads and men are safer because the automatic worm brake will hold the load at whatever point desired The favorite among Utilities and Contractors, each Tulsa Winch is built for longer life. Ask the man who uses one on the heavy, difficult jobs.

Tulsa Winch
TULSA, OKLAHOMA
DIVISION OF VICKERS Inc.

PACKAGED HEAT

GRACE RAPID FIRE Circulating & Steam Heater for tank cars or storage tanks



More square feet of heating surface means longer flue life in the GRACE RAPID FIRE Circulating & Steam Heater for tank cars or storage tanks.

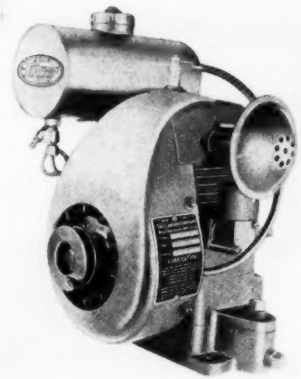
The two units are mounted on one chassis, suitable for truck mounting.

Steamer thaws one car while circulator is heating and unloading another.

Write now for complete information.

W. E. GRACE MFG. CO.

6000 SOUTH LAMAR STREET DALLAS, TEXAS



LIGHTWEIGHT GASOLINE ENGINE—Weighing only 23 lb., new $\frac{3}{4}$-hp. motor is compact four-cycle engine for powering portable equipment. Engine has bore of $1\frac{5}{8}$ in. and stroke of $1\frac{1}{2}$ in., with piston displacement of 3.11 cu.in. The engine is air-cooled.—**Lauson Co., New Holstein, Wis.**

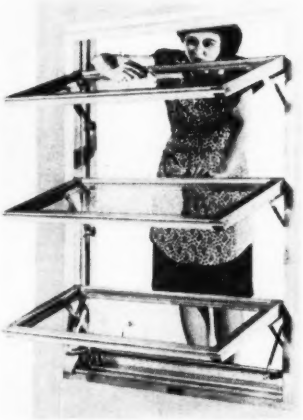
S STANDS FOR *Sterling* AND *Satisfaction!*

The "S" stamped on the back of every Sterling Wheelbarrow symbolizes Sterling quality and satisfaction in barrow transportation. It is our way of letting you know that Sterlings are built from the finest materials by skilled craftsmen.

STERLING WHEELBARROW CO., MILWAUKEE 14, WIS.

Welded tray, all-steel construction with reinforced tubular steel frame, channel steel legs and roller bearing wheel with pneumatic tire. Assures smooth wheeling and perfect balance.

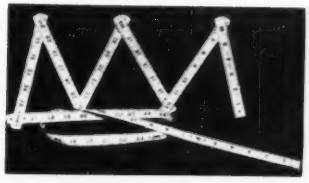
Sterling WHEELBARROWS



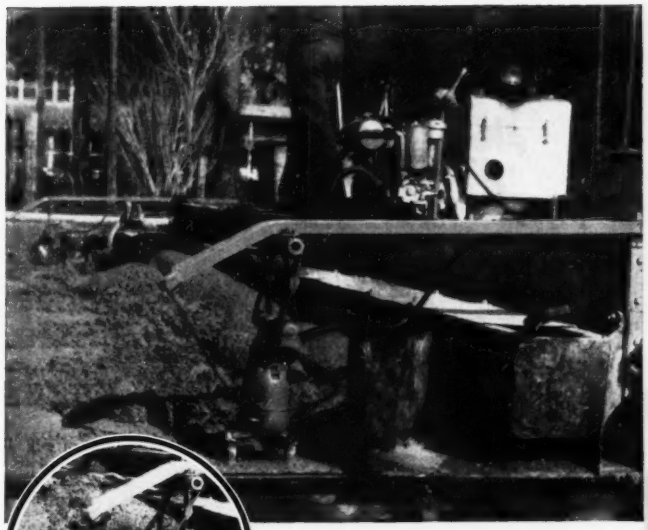
AWNING-TYPE WOOD WINDOW—Patented mechanism lowers each vent from top as it opens outward. This permits easy cleaning from inside of building and provides controlled ventilation without permitting rain to enter. Bronze weather stripping is used at both top and bottom of each sash, assuring a completely weather-sealed and dustproof window when closed. Window is operated by means of a crank and may be opened only a fraction of an inch or a full 85 deg. Mechanism locks window in any desired position. Vertical bronze channels are used in the jamb for smooth metal-on-metal operation. Individual adjustment plates assure tight closing and allow compensation against warpage.—**Super-Vent Co., 905 W. North Ave., Chicago, Ill.**

COMBINATION HELMET—Welding helmet is joined to Skullgard posts fitted with spring catches which are inserted into plastic lugs at either side. Light pressure at forward end of posts retracts spring catches and releases welding helmet. Combination helmet is designed for welder on exposed jobs where head protection is required. Skullgard may be worn peak forward by itself for other work when welding helmet is not required.—**Mine Safety Appliances Co., Pittsburgh 8, Pa.**

FOUR NEW WELDING ELECTRODES—Four new electrodes have been developed for a wide range of arc-welding operations including: (1) most hardenable steels; (2) a wide variety of low-alloy steels; (3) steel castings; (4) wear-resisting weld metal for surfacing dipper teeth, dragline bucket lifts, tractor cleats, roller crusher teeth, mud pumps, crane hooks, and sizing screens.—**General Electric Co., Schenectady 5, N.Y.**



FOLDING RULE—White enameled 6-ft. zigzag folding rule weighing 3 1/5 oz. is made of a special hardened and tempered alloy steel and can be bent and twisted and yet will always spring back to normal shape. Can be used to take inside measurements, measure pipes and rounds and also extends rigidly for out-of-reach measurements. Does not have to be closed each time it is used to prevent breakage.—**Durall Tool Corp., 117 Woodworth Ave., Yonkers, N.Y.**



JACKSON

SIDE FORM VIBRATOR

FOR CONCRETE PAVING

SAVES BETTER PART OF 2 MEN'S LABOR

This machine, which may be mounted on any modern finisher, Jackson Vibratory Paving Tube or spreader, employs two vibratory units that are simultaneously lowered into or raised from the concrete through controls on the deck of the finisher or spreader by the regular operator. It eliminates manual vibrating of concrete at the side forms.

INSURES A BETTER JOB . . . . . .

Vibrators operate well ahead of front screed of any finisher, will operate close to forms or reinforcement without fouling, will ride over any obstruction encountered and will NOT penetrate through the concrete into the sub-base. Thorough compaction is assured regardless of speed of finisher or spreader. In reverse travel, vibrators may be elevated or left in concrete without damage to concrete or equipment. NO SPOTS WILL BE MISSED WHERE THIS MACHINE IS USED.

RUGGED—TROUBLE-FREE . . . . . .

Vibrators are electric vibratory motors in which the vibratory medium is an integral part of the motor. Vibration is transmitted to a simple loop of steel tubing bolted to the lower end of the motor. Thus all flexible shafts or long rigid shafts, which can be a major source of trouble, have been eliminated. Motors are exceptionally rugged, having been proved in more than 25 years of severe service. Power is supplied by reliable Jackson Power Plant on the finisher or spreader deck.

Nothing approaching the efficiency of this machine has ever before been offered for this purpose. Write for the complete facts, NOW!

OTHER MONEY-MAKING PAVING EQUIPMENT

Jackson Vibratory Paving Tubes for vibrating full slab-widths of highway and airport paving; Jackson Municipal Paving Unit (manually guided electric vibratory screed and power plant); Vibrators for every type of paving and construction.

Manufactured by ELECTRIC TAMPER & EQUIPMENT CO. for

JACKSON VIBRATORS, INC., LUDINGTON, MICH.

Parmanco

MECHANICAL FEED
HORIZONTAL DRILL
WITH TRACTION DRIVE

Ten years of field test has proven that our power-feed design of direct, transmission and worm gearing with two-speed control will not only cut shot hole drilling time in half but also eliminates costly maintenance delays. V-belt drive to the power-feed with an additional ample clutch in that assembly gives absolute control of a drilling speed of two to three feet per minute with a retrieving speed of twenty-four feet per minute.

The Parmanco Horizontal is adapted to all forms of high-wall drilling, will handle a six-inch auger up to a distance of sixty feet or more and, by use of our patented augers with interrupted flights and secondary cutters, will drill an absolutely clean hole with a minimum of torque. It permits the drilling of a controlled-angle hole which makes possible a great saving of explosives through the cantilever effect of this controlled-angle drilled hole.

EFFICIENT STRIPPING STARTS WITH EFFICIENT DRILLING

PARIS MANUFACTURING COMPANY
PARIS, ILLINOIS

New PUBLICATIONS From MANUFACTURERS

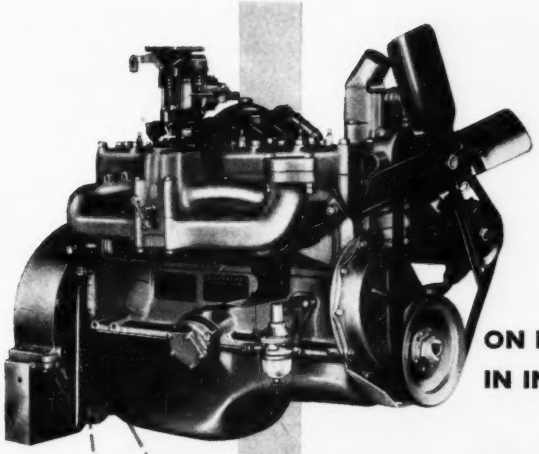
The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

FAN-COOLED MOTORS—Nine outstanding features of totally-inclosed fan-cooled motors with tube-type, air-to-air heat exchangers are described in a new bulletin. It is claimed that the problem of removing heat losses without exposing electrical parts to harmful atmospheric conditions has been solved in these motors, available in squirrel cage, wound rotor and synchronous types, for vertical or horizontal installation. Ratings range from 150 hp. at 1,200 rpm. to several thousand horsepower, at standard speeds of from 3,600 rpm. to about 300 rpm.—**Allis-Chalmers Mfg. Co., Milwaukee, Wis.**

SPECIAL HANDLING EQUIPMENT—More than 110 different items and 150 photographs of special materials handling jobs have been assembled in a book of ten sections covering industrial power trucks, lift trucks, stackers, special platforms and wheel trucks.—**Lewis-Shepard Products, Inc., 184 Walnut St., Watertown 72, Mass.**

ONE-YARD DRAGLINE—A new 16-p. bulletin (X-11-1) covering the P&H Model 455-A, with pages of striking on-the-job pictures, describes and illustrates all the added value features of this machine. This model is specially designed for crane, clamshell and dragline service.—**Harnischfeger Corp., Excavator Division, 4400 W. National Ave., Milwaukee 14, Wis.**

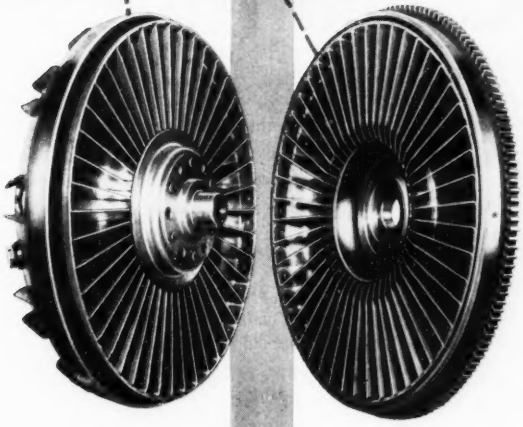
TRUCK SIZE AND WEIGHT RESTRICTIONS — In compiling the 1949 edition of "Truck and Trailer Size and Weight Restrictions," the publishers got state officials to check and approve the statements concerning the laws now in force in their respective states. The booklet covers the laws of every state, devoting one page to each width, height, length of single unit, tractor semi-trailer and other combinations, minimum axle spacing, weight restrictions per axle or per wheel are given, together with special laws governing sizes and weight of truck and truck-trailer combinations. — **The Four Wheel Drive Auto Co., Clintonville, Wis.**



FOR A BETTER DAY'S WORK

ON FARMS—IN FORESTS—IN OIL FIELDS IN INDUSTRY AND ON THE HIGHWAYS!

Now available with *gýrol* Fluid Couplings!



● You get the good things *first* from Chrysler! Now *gýrol* Fluid Couplings are available on Chrysler Industrial Engines for industrial applications. Here's the cushion of safety between power and load that is so greatly needed on tough jobs. This time-tested coupling prevents shock load, engine stalling, and eliminates declutching. It lengthens clutch life and makes for easier handling of equipment. Famous *gýrol* Fluid Coupling, complete with clutch, clutch housing and a 3 or 4-speed transmission is offered on Models 5, 6, 7, 8, and 12. See your Chrysler Industrial Engine dealer or write for information . . .

INDUSTRIAL ENGINE DIVISION, CHRYSLER CORP.
12200 E. JEFFERSON, DETROIT 31, MICHIGAN

NATION-WIDE SERVICE

FACTORY-ENGINEERED AND TESTED PARTS WITH EXPERT MAINTENANCE WHEREVER YOU ARE

CHRYSLER

INDUSTRIAL ENGINES AND POWER UNITS

HORSEPOWER WITH A PEDIGREE

He'll help you avoid crushed rope

IWRC

An independent wire rope core gives added support to the strands which lie around it.

In many types of wire-rope service, heavy pressures on the rope itself are unavoidable. The Bethlehem man knows, for instance, that even with the best of spooling, a fiber-cored wire rope is sometimes crushed on the drum. Often, too, loads are so heavy that great pressures exist as the rope passes around sheaves. These pressures frequently have a distorting effect on the wire structure of the rope.

When such conditions exist, the Bethlehem field engineer can usually spot them. Then he'll generally recommend rope with an IWRC (independent wire rope core). The IWRC is made entirely of steel wires and takes the place of the usual fiber core. Being all-steel, it naturally gives better support to the strands of the rope proper. Thus, to a large extent, heavy outer pressures are counteracted; the chances of crushing or distorting the rope are greatly reduced.

It's a good idea to have the Bethlehem field man look over your equipment, to see whether you need rope with IWRC. He will recommend it only where needed. In many cases, IWRC lowers costs substantially by greatly prolonging rope life.

Any time the Bethlehem man can help you—with this or other wire-rope problems—ask him to pay you a visit. He's always glad to, and there is never any charge for his services, no matter how much time he spends with you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM WIRE ROPE
BETHLEHEM STEEL

When you think WIRE ROPE . . . think BETHLEHEM

TRAVELER CRANE AND EXCAVATOR—New catalog pictorially illustrates the mobility and versatility of the Byers Traveler, Model "61W" $\frac{1}{2}$-cu.yd. and Model "71W" $\frac{5}{8}$-cu.yd. excavators and cranes. This 24-p. catalog also shows the adaptability of the rubber-tired Traveler to construction work. Using both photographs and line drawings, the more important mechanical features of the operating machinery are also described.—**The Byers Machine Co., Ravenna, Ohio.**

SNOW REMOVAL—The continual battle of highway crews night and day against severe weather conditions and the pre-season work conducted in improving the speedy operation of snow removal is shown in a current 11-p. booklet, "Beating Back the Blizzards." Other recent Caterpillar booklets deal with building and maintaining with diesel motor graders and keeping on schedule with off-track equipment.—**Caterpillar Tractor Co., Peoria 8, Ill.**

WESTERN PINE DIRECTORY—A new 16-p. directory lists 303 sawmills, their locations, sales office addresses and a percentage breakdown of their production by species. The booklet also gives a listing of the staple and factory products and specialties manufactured and handled. Member mills listed are manufacturers of lumber and related products from western pines and associated woods including ponderosa pine, Idaho white pine, sugar pine, white fir, march, Douglas fir, Englemann spruce, Lodgepole Pine, red cedar and incense cedar.—**Western Pine Association, Yeon Building, Portland 4, Ore.**

SELF-PROPELLED CRANES—A 16-page bulletin illustrates 48 of the various applications of self-propelled cranes for industrial material handling and construction operations. These are one-man operated cranes, with four speeds in either direction. They travel to all parts of the job at speeds up to 7 mph. A selection of wide-track and standard width machines are offered in the self-propelled models.—**The Thew Shovel Co., Lorain, Ohio.**

WATER EQUIVALENTS—A handy pocket-size booklet contains quick reference charts for converting water measurements from one set of terms to another. It gives approximate figures for weight, power and volume; rate of flow; and velocity in different pipes. It is of value to all in the water-works field.—**R. W. Sparling, 101 Park Ave., New York, N. Y.**

Reliable power... for a few cents an hour!

WITTE DIESELS

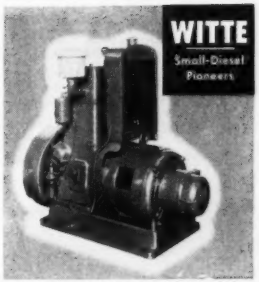
There are two main reasons why Witte customers are satisfied customers.

▶Witte Dieselectric Plants and Diesel Power Units help them cut fuel costs. A Witte is a full diesel; it starts and operates on low cost fuel oil. And the Witte precombustion chamber assures full fuel combustion, giving you the maximum amount of power from every dollar you spend for fuel.

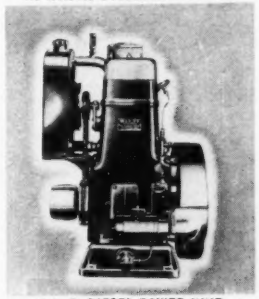
▶Witte Dieselectric Plants and Power Units are reliable. They give continuous, trouble-free performance year after year under strenuous operating conditions. All the power a Witte can produce is always at your command instantly. Simple, sturdy, compact construction practically eliminates maintenance problems.

WHAT SIZE DO YOU NEED? Witte Dieselectric Plants range from 3 to 10 KVA-AC 2.5 to 8 KW-DC. Witte Diesel Power Units are from 4 to 12 H.P. And they are available with either radiator or tank cooling system. See your Witte dealer; or write for free illustrated literature.

WITTE ENGINE WORKS, KANSAS CITY 3, MO. U. S. A.
Division of Oil Well Supply Company



7.5 KVA-AC DIESELECTRIC PLANT


4 H. P. DIESEL POWER UNIT

WITTE DIESELECTRIC PLANTS AND DIESEL POWER UNITS

USS UNITED STATES STEEL

Important **TO HEALTH AND EFFICIENCY**

COOL, PURE DRINKING WATER ...ON THE JOB

Banishes germ-spreading cups, dippers, pails.

Dobbins Portable Sanitary Drinking Fountain

Assures an adequate supply of cool, pure drinking water for workers *everywhere*—in factory or field. Protects their health, and keeps them on the job. Fountain has inner water container of stainless steel. Four gallon tank is fully insulated. Constant air pressure for instant flow of water is furnished by a few strokes of the pump at widely spaced intervals. *Operates at the press of a button*, like any bubbler drinking fountain. May be easily carried from place to place by shoulder strap, or mounted on truck, tractor or locomotive.

DOBBINS MANUFACTURING CO.
DEPARTMENT 452, ELKHART, INDIANA

Dobbins Superbilt PORTABLE DRINKING FOUNTAIN

WRITE TODAY FOR FREE DESCRIPTIVE FOLDER

W.T.Q.
SPELLS
SECURITY!
FOR OVER 35 YEARS
THE THORO SYSTEM
HAS BEEN SOLVING
WATER PROBLEMS
WITH MASONRY—
WATERPLUG
to stop the leaks
THOROSEAL
fills and seals
surface
QUICKSEAL
for beautiful
finish
Never before has the masonry business been so big, and never before have the problems accompanying it been so great.
Today, when masonry starts sweating or springs a running leak, The THORO System products are brought on the job to immediately correct the situation. In 35 years, these products have been gaining a nationally-known name.
No wonder the old-time contractor will always specify this time-proven way of correcting masonry problems. It's the only sure way!! Order through your builder and contractors supply dealers.
WRITE NOW!
Get our 16 page brochure, pictorially describing, in detail, "How To Do It," it's yours for the asking. No. 142
Standard Dry Wall Products
BOX X, NEW EAGLE, PENNA.

MASONRY DRILLS—A new folder has been prepared describing applications and advantages of a new line of spiral fluted carbide-tipped masonry drills. The folder lists diameter, shank length and over-all length and gives prices on each size. Sets and kits of assorted sizes also are illustrated and priced.—**Super Tool Co., 21,650 Hoover Road, Detroit 13, Mich.**

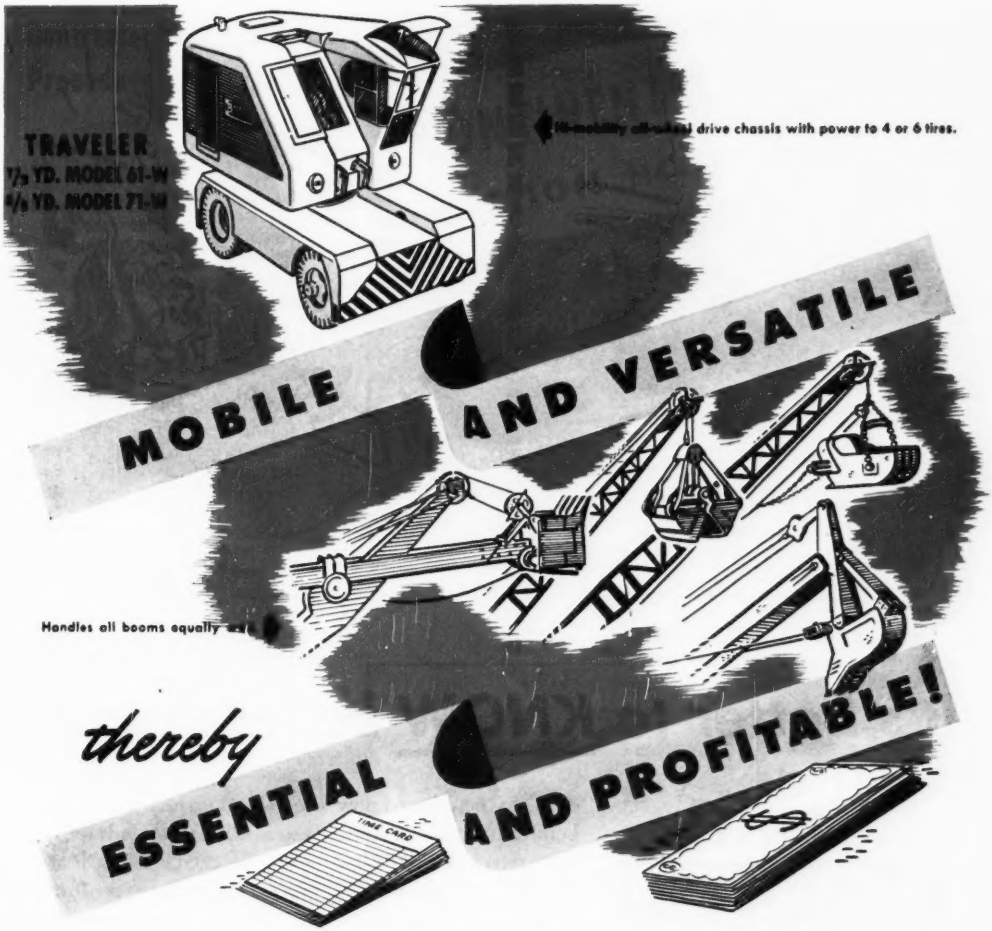
ADJUSTABLE STEEL FORMS—The use of adjustable steel forms to effect economies and attain speed in the construction of concrete bridge railing, on varying grades, is the subject of a folder by Concrete Forms Corp. This is the first of a series of pamphlets describing the use of steel forms for special purposes in poured concrete. It contains complete drawings of "Details of Steel Form for Concrete Bridge Railing" and "Forms for Concrete Bridge Railing—Assembly of Form Panels."—**Armstrong, Schleifer & Ripin, 11 West 42nd St., New York 18, N. Y.**

HYDRAULIC CYLINDERS—A 2-color, 20-p. booklet illustrates and describes all standard cylinders, with complete diagrams and information to aid in laying out circuits.— **Gerotor May Corp., Baltimore 3, Md.**

CORRUGATED METAL PIPE—The advantages of flexible paved corrugated metal pipe in resisting corrosion, erosion, shearing and other damage is described in technical terms with typical applications and engineering data in a new 4-p. illustrated bulletin issued by—**United Steel Fabricators, Inc., Wooster, Ohio.**

PAYLOADER ACTION VIEWS—New literature contains complete specifications on a 1½-cu.yd. tractor shovel and numerous action views from a variety of jobs. Many outstanding advantages are also illustrated—hydraulic bucket control, several speeds in either direction, fast forward-reverse control, power boosted steering, controlled dumping, operator visibility, ground-gripping traction provided by large earth mover tires and 4-wheel drive.—**The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Ill.**

CEMENT GUN—A 65-p. booklet describes and illustrates many of the uses of the machine made under the trademark and trade name "Cement Gun," and its sand-cement product, "Gunite."—**Cement Gun Co., Allentown, Pa.**



● You'll be able to move Byers Traveler *where* and *when* its versatile services are required! It's always ready to go..

On or off the highway, the Traveler propels itself under the direction of one man only . . . the operator.

Around the job, you'll find it fast, powerful and adaptable to most every job condition. It handles all boom attachments equally well, performing many tasks not adapted to a crawler rig or to a long-chassis-two-man* rubber tired crane or shovel.

These differences add up to make Byers Traveler a profitable machine to own and use. Ask your nearby Byers distributor for the new complete ½ or ⅝ yd. Traveler catalog, just off the press.

THE BYERS MACHINE CO., Ravenna, Ohio
Distributors Throughout the World

*Also available from Byers if you prefer it.

Typical Traveler job . . . pick it up here, carry it anywhere, set it down there.

INQUIRE TODAY FOR BYERS TRAVELER

It's better to KNOW beforehand

And it's better to know the size of a mixer or paver beforehand, too. Fortunately, you *can* know in advance—definitely and exactly—thanks to the AGC Rating Plate. This Plate is your guarantee that the equipment conforms accurately to the requirements of size and capacity set up by the Mixer Manufacturers Bureau.

So protect yourself from guessing on capacities and jobs. Standardize on mixers and pavers bearing the AGC Rating Plate.

MIXER MANUFACTURERS BUREAU

Affiliated with the Associated General Contractors of America, Inc.

CHAIN BELT COMPANY
Milwaukee, Wis.

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

KOEHRING COMPANY
Milwaukee, Wis.

WORTHINGTON PUMP & MACHINERY CORP.
Ransome Div., Dunellen, N. J.

KWIK-MIX COMPANY
Port Washington, Wis.

THE FOOTE CO., INC.
Nunda, N. Y.

THE JAEGER MACHINE CO.
Columbus, Ohio

THE T. L. SMITH COMPANY
Milwaukee, Wis.

THE KNICKERBOCKER CO.
Jackson, Mich.

Contractor's Job Office Procedure . . . Part 3

(Continued from page 108)

you. Bonds, 22.01, means Performance and Payment Bonds furnished by us to the owner. Subcontractors' bonds are charged to sub-accounts, section 15.00.

23.00 *Equipment Expense*—The items in this section should be self-explanatory.

24.00 *Automotive Expense*—Items here also should be self-explanatory. 24.06, Mileage paid to Employees, is reimbursement for privately owned cars used for business purposes. Authorization should be obtained in advance.

25.00 *Labor Control Account*—For home office use only. This is merely to control the labor distribution to various other sections, as made by the job office.

30.00 *Camp*—These accounts are seldom used, as camps are ordinarily run for us by a regular commissary firm. If so, we sometimes must pay a subsidy, which is charged here.

ADDENDUM No. 2 . . .

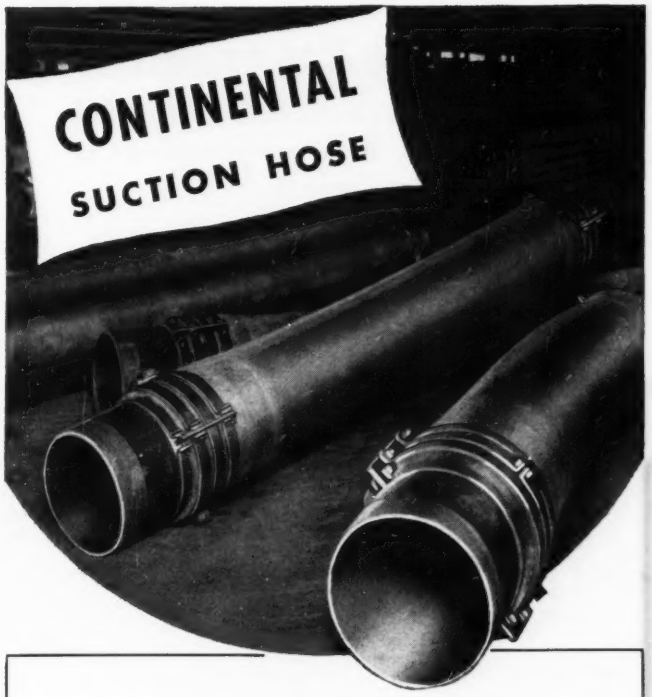
Forms, Stationery, Supplies and Equipment for Job Offices

The following lists are reminders when setting up a new job office. They will also tell you about certain forms that are not generally used but for which a need may sometimes develop on your job.

A. *Forms for Job Office Use* furnished by Minneapolis Office or Area Office:

(1) Purchase Order (long); (1a) Purchase Order (short) (Discontinued when present supply is used up); (2) Requisition on Purchasing Department; (3) Report on Extra Work; (4) Unloading and Receiving Report; (5) Take-Off Sheets; (7) Master Payroll Sheet; (7a) Ditto Payroll Sheet; (9a) Daily Time Report Sheet; (9b) Foreman's Daily Cost Report (Daily Time Card); (14) General Estimate Sheet; (18) Daily Check Report; (22) Sub-Contractor Estimate; (23) Sub-Contractor Agreement; (24) Change Order; (25) Johnson, Drake & Piper Invoice (Short Form—Bond and Onionskin); (25a) Johnson, Drake & Piper Invoice (Long Form—Bond

(Continued on page 148)



Continental Warehouse Service Helps You Keep the Job Moving!

When you need suction hose in a hurry, consider the advantages of Continental's near-at-hand branch warehouse facilities. These factory warehouses, listed below, carry large stocks of hose for every requirement. They're located within reasonable telephone and delivery range. In short, they're equipped and situated to give the prompt, dependable service that helps you keep the job moving—that protects your profit in a job. Get acquainted *now* with Continental Warehouse Service.

LET US SEND YOU THIS CATALOG →

With a Continental Catalog in your field office, you have helpful buying information at your finger tips. Write for your catalog today.

Rubber by CONTINENTAL RUBBER WORKS

1988 LIBERTY AVENUE • ERIE, PENNSYLVANIA

BRANCHES

Baltimore, Md.	Dayton, Ohio	Los Angeles, Calif.	Pittsburgh, Pa.
Boston, Mass.	Detroit, Mich.	Lutz, Fla.	Richmond, Va.
Buffalo, N. Y.	Hartford, Conn.	Memphis, Tenn.	Rochester, N. Y.
Chicago, Ill.	Indianapolis, Ind.	Milwaukee, Wis.	St. Louis, Mo.
Cincinnati, Ohio	Kansas City, Mo.	New York, N. Y.	San Francisco, Calif.
Cleveland, Ohio	Lancaster, S. C.	Philadelphia, Pa.	Syracuse, N. Y.

RIGHT TO START WITH!

J-M INDUSTRIAL FRICTION MATERIALS
are specified by most manufacturers of earth-moving equipment.

J-M says "stop" and "go" to more tonnage than any other friction materials because the trained buyers of leading machinery manufacturers know that J-M quality results in longer service and better performance.

RIGHT TO STAY WITH!

Replace with J-M INDUSTRIAL FRICTION MATERIALS and get better braking performance always.

Stay with J-M and you're sure of long service, high braking efficiency and economical operation. Exceptionally durable, mechanically strong, J-M Friction Materials withstand faster speeds, heavier loads, harder shocks and higher temperatures. J-M Friction Materials scour the braking surface without scoring it—are easy to wear in, hard to wear out. See your J-M Friction Material distributor or write Johns-Manville, Box 290, New York 16, N. Y.

JM

Johns-Manville
INDUSTRIAL FRICTION MATERIALS
No. 1 With Leading Manufacturers

(Continued from page 147)

and Onionskin); (26) Blank Invoice Forms (Short Form); (26a) Blank Invoice Forms (Long Form); (29) Daily Hired Truck Report; (30) Weekly Labor Distribution Report; (30a) Master Sheet for Preparing Job Labor Cost Budget; (31) Foreman's Memo Slip; (40) Application and Hiring Slip; (41) Employees' Earnings Record (Home Office Use Only); (42) Daily Job Diary; (43) Job Completion Report; (44) New Job Organization Report.

B. *Stationery and Envelopes* furnished by Minneapolis office.
Letterhead—Bond and Air Mail Weights.
Second Sheets—Bond and Air Mail Weights
Copy Sheets—Goldenrod, Pink and White
Manila Envelopes—Small, Medium, Large and Extra Large
Inter-Office Stationery — Contact Your Area Office.

C. *Equipment*—Equipment should be checked with the Area Office. If they do not have what is needed, Minneapolis may possibly be able to furnish it. If not available either place, these items may be rented or purchased locally.
Office Machines--Adding Machine, Calculator, Check Protector, Ditto Machine, Typewriter.

Furniture—Filing Cabinets, Waste Baskets, Stationery Cabinets, Desks, Chairs.

D. *Supplies*—The following items are furnished by either the Area or the Minneapolis Office:

Handy Expense Books, Rubber Invoice Stamps, Rubber Job Stamp, Wage Rate Calculation Book, Withholding Tax Book.

The following incidental supplies are purchased locally after checking with the Area Office. Often, the Area Office has supplies of this type left from some other job:

Clip Boards, Columnar Pads, Date Stamps and Stamp Pads, Desk Pen Set; *Envelopes, Erasers, File Folders, File Labels, Glue, Ink, Paper Clips and Fasteners, Parcel Post Labels, Pencils—red, copying and lead, Pencil Sharpener, Postage Scale, Rubber Bands, Rulers, Scissors, Scotch Tape and Dispenser, Scratch Pads, Stapler and Staples, Staple Remover, Stenographer's Notebooks, Typing Paper—Bond and Onionskin.

*Envelopes: Letter size envelopes should be purchased pre-stamped from the local post office. Have a rubber stamp made with your return address and stamp the envelopes as you use them. When your job is com-

(Continued on page 150)

YOU CAN BE **SURE**.. IF IT'S

Westinghouse

...to clear the way to big A-C Welding savings!

Now, it is no longer necessary for you to pay a premium price on a-c electrodes. The popular Westinghouse ACP electrode (equal performance on a-c or d-c), along with the complete line of Westinghouse a-c—d-c electrodes, is now available to you at the same price as straight d-c electrodes. This is of particular significance because it permits you to take full advantage of the enormous savings of a-c welding without the penalty of higher electrode costs.

Even in cases where only a few welding machines are used, the switch from d-c to a-c promises substantial savings in power, in wages and in maintenance.

Savings in power—because a-c welding requires one-third less power, giving 85% to 90% efficiency as against 55% to 65% for d-c machines.

Savings in wages—because a-c welding is 20% to 30% faster, permitting excellent welds at higher speeds on all classes of work.

Savings in maintenance—because a-c welders have no rotating parts. There are no brushes to replace . . . no commutators to clean or machine . . . no need for frequent greasing. But this is only part of the story. For the complete information on the savings opportunity this adjusted electrode price offers, send for Booklet B-4199. Address Westinghouse Electric Corporation, P. O. Box 2025, Buffalo 5, New York. J-21520

Westinghouse

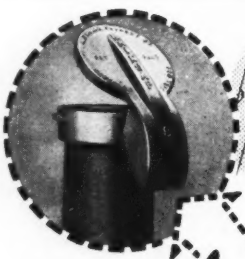
EVERYTHING for Welding ANYTHING!

This claim is strongly substantiated by the increasing numbers of excavating contractors who have standardized on Owen Buckets to "Insure a Bigger Day's Work".

Long popular, Owen design and construction characteristics make for consistent "ease of operation" with "A Mouthful at Every Bite" and a clean and rapid discharge.

THE OWEN BUCKET CO. 6020 Breakwater Ave., Cleveland, O.

BRANCHES: PHILADELPHIA • CHICAGO • BERKELEY, CALIF.



RAINCAP

New!

THE CAP THAT DOES NOT FORGET TO CLOSE

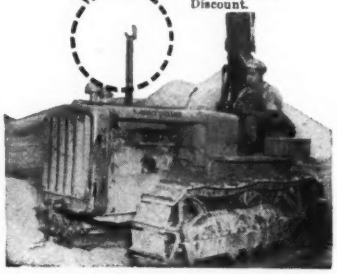
Completely automatic — the "RAIN-CAP" is counterbalanced to open when the tractor starts and close when it stops. Rust proof—made of cast aluminum—with bronze bushing—can be installed in two minutes. F.O.B. Waterloo, Iowa.

- Immediate delivery
- Liberal Dealer Discount.

STOPS MOISTURE FROM FALLING INTO TRACTOR EXHAUST

No.	O.D. Exhaust	Retail
1	2⅛"	$1.90
2	2⅜"	1.90
3	2¾"	1.90
5	1⅞"	1.90
55	2"	1.90
5x	1¾"	1.90
6	1½"	1.90
66	1⅜"	1.90
7	2½"	1.90
8	3"	2.50
9	3⅛"	2.50
10	3¼"	2.50
11	3½"	2.75
115	3¾"	3.00
12	4"	3.00
123	4⅛"	3.00
125	4¼"	3.00
14	4½"	3.00

Write Dept. CM.



WATERLOO FOUNDRY CO., WATERLOO, IOWA

(Continued from page 148)

pleted turn in your unused envelopes to the Area Office and in that way there will be no waste.

E. *Engineering Supplies* — Check with the Area Office as to what they can furnish. Buy other necessary items locally.

General Note—Upon completion of a job, take a careful inventory of the unused forms and supplies. These are to be neatly boxed and sent to the Area Office unless instructions are received to send them to a new job office.

ADDENDUM No. 3
Insurance and Bonds
Nation-Wide Basis

AUTOMOTIVE

1. *Auto and Truck Liability,* company owned.—Covers all liability arising out of the ownership, maintenance or use of any automobile, truck or trailer, company owned, hired or leased, including non-owned automobiles, wherever located in the United States. We carry Bodily Injury limits of $100/300, and Property Damage limits of $10,000. Our policy is carried in the Continental Casualty Company, for all units. New purchases should be reported to Minneapolis right away, for, although we have a stop-gap coverage which applies automatically, it is based on the idea that we report all additions and deletions promptly.

2. *Auto and Truck, Company Owned, Comprehensive Fire and Theft, and Auto Collision (no trucks).*—Covers only autos, trucks and trailers scheduled in policy, although we have automotive coverage for 30 days on additions and changes. Be sure to notify right away on new purchases, on this account. We carry no collision on trucks because we think rates are too high for the exposure when so much of our truck use is "off-the-road." The Transportation Insurance Co. (a subsidiary of the Continental) carries this policy. Stated value, established by the assured, is covered, with a $25 deductible clause for collision loss on cars.

3. *Individually Owned Automobiles*—The company carries a Continental Casualty Co. policy on various cars owned individually by certain administrative employees. The premiums are reimbursed to the company by the individuals. This policy was written to assure

(Continued on page 152)

Your costs come down with *DISSTON*

ONE-MAN CHAIN SAW

Powered by the Mercury Gasoline Engine

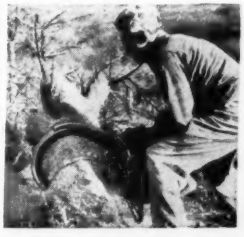
Make the modern move to the Disston One-Man Chain Saw. Watch production soar and costs come down. In mere minutes this saw does the felling, bucking and limbing that used to burn up costly hours.

The Disston One-Man Chain Saw is dependable—light to handle and husky—has long life, anti-friction bearings and positive lubrication. Easily started in any weather. Easily, safely controlled, even when cutting at awkward angles and upside down! Never has modern power taken such a big bite out of the cost of cutting timber and lumber. A demonstration proves it.

Get in touch with your nearest Disston Dealer.
Or write direct for full information.

NEW DISSTON ONE-MAN BOW SAW FOR ADDED USES

No more pinch, drag and strain in the cut. Available as a complete unit (Price $432)—or as an extra useful accessory (Price $55 including chain). Quickly interchangeable with Disston One-Man Guide Rails, anytime —anywhere.



ALSO...The best value for bigger timber . . . The DISSTON EXTRA-DUTY TWO-MAN CHAIN SAW

This 12 hp. husky does tough jobs double-quick. The right saw for heavy work. Pivoted blade swings 360°—for handy cutting at all angles.

MAIL COUPON TODAY

HENRY DISSTON & SONS, INC.
448 Tacony, Philadelphia 35, Pa.

Gentlemen: Please send me full information on the:

- ☐ DISSTON ONE-MAN CHAIN SAW
- ☐ DISSTON TWO-MAN CHAIN SAW

Name_____

Firm_____

St. & No._____

City_____ Zone____ State_____

HENRY DISSTON & SONS, INC.
448 Tacony, Philadelphia 35, Pa., U. S. A.
Canadian Factory:
2-20 Fraser Ave., Toronto 3, Ont.

WHEN YOU BUY A DISSTON PRODUCT YOU BUY DISSTON STEEL SKILL and SERVICE

Baughman BELT and BUCKET ELEVATOR

EASILY and QUICKLY ASSEMBLED . . .

Elevates 20 to 80 Ft. High . . . (10 foot multiples)

"Self-supporting" Rigid Alloy Steel Construction

for
QUARRIES
BLOCK PLANTS
BATCHING PLANTS
PRE-MIX PLANTS
COAL YARDS
MATERIAL YARDS
GRAVEL PLANTS
CEMENT PLANTS
FEED MILLS
STORAGE PLANTS

Hi-Speed, Smooth, Quiet-Handling with a **BAUGHMAN HI-SPEED BELT AND BUCKET ELEVATOR!**

Put loose, free-flowing materials aloft easily and speedily . . . cut down costly handling time.

Baughman Hi-Speed Vertical Belt and Bucket Elevator is *ever* ready at the flick of a switch to elevate sand, gravel, crushed rock, limestone, chat, cinders, egg and stoker coal, etc., aloft at better than ton-a-minute speed.

Tailored to meet ANY HEIGHT REQUIREMENT

By coupling standard 10-foot sections together (on your order) we quickly furnish a Baughman Hi-Speed Elevator tailored to your particular requirements. Constructed of rugged, durable high tensile alloy steel . . . 30% lighter . . . 17% stronger . . . 5 times more rust resistant.

UNLOAD CAR AND CHARGE ELEVATOR IN ONE CONTINUOUS OPERATION!

HEAVY DUTY TROUGHED BELT UNDER-TRACK UNLOADER

Primarily designed for large users with semi-permanent trackage set-ups. Extends beyond rails on far side of car; collects material from under entire car width. Synchronized speeds of Car Unloader and Bucket Elevator keep flow smooth and even with no choking or overloading.

Write today **For Prices and Complete Information**

THERE IS A BAUGHMAN DISTRIBUTOR NEAR YOU

BAUGHMAN

Baughman Manufacturing Co., Inc.

240 ARCH STREET • JERSEYVILLE, ILLINOIS

If it's HI-SPEED *. . . It's* BAUGHMAN!

(Continued from page 150)

uniform coverage and high limits on individuals where the company might be made a party to a suit if individual protection were not inclusive and high. The home office will include any employee upon his request, but there is no particular advantage from the employee's standpoint. Rates are the same as for any other stock company coverage.

EQUIPMENT FLOATER

All equipment (except autos, trucks and marine), company owned, or for which the company is liable, wherever located in the United States or Canada, is covered under this policy, for any possible type of loss. It is a tailor-made policy, of the broadest form, and written only because we have had a fine record for many years not only as to losses, but also as to company integrity. This coverage also applies to materials when not separately covered under builder's risk, but such coverage is limited to $40,000. Temporary buildings, tools, and supplies are covered up to the limit of the policy.

There is a $200 deductible clause for each loss under this policy, in keeping with company practice of protecting primarily against large losses or hazards of catastrophe. One of the best features of this is that it contains no Co-Insurance clause. To obtain this, we have to be careful at all times to keep the policy amount at substantially 100 percent of value. The home office regularly reviews additions by purchase. Any time we undertake a substantial responsibility for equipment (such as by rental), the home office should be informed, and reminded to check the floater coverage.

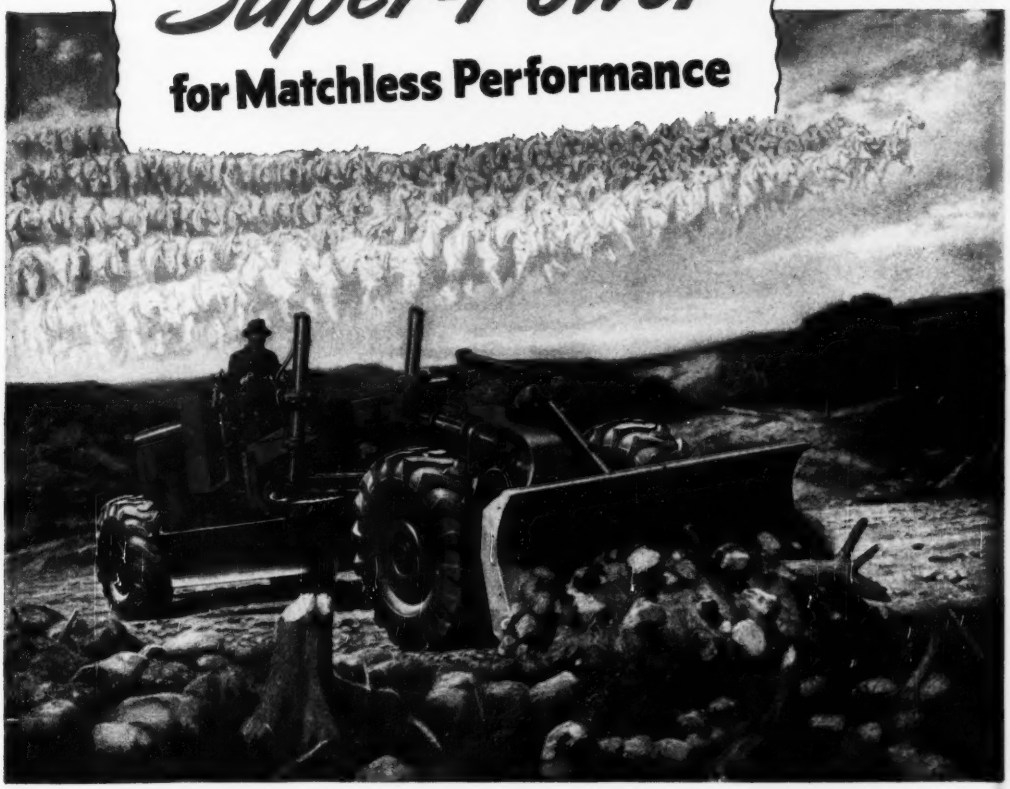
PAYROLL INSURANCE

1. *Workmen's Compensation.* We carry the legal requirements under laws of each state in which we operate. In some it is mandatory to carry such insurance with the state fund, while in others it is optional. In most states we are covered through private insurance companies. We carry blanket-type policies by area, which are endorsed to cover new states, but meantime give us automatic coverage except in "mandatory" states, i.e., states having monopolistic state insurance funds. We also carry coverage protecting against civil

(Continued on page 155)

Super-Power

for Matchless Performance



There is No Substitute for All-Wheel Drive and All-Wheel Steer in a motor grader . . . no way in which any rear drive, front steer machine can equal the maneuverability, power-at-the-blade, and all-around performance of an Austin-Western "88" or "99".

With All-Wheel Drive, there are no idling front wheels—no dead front end to consume power and decrease operating efficiency. All weight is on driving wheels—front and rear—contributing 100% to traction and utilizing the full power of the engine.

All-Wheel Steer provides unequalled maneuverability; saves time on every job; makes it possible to work in places where ordinary motor graders cannot go—do things they cannot do.

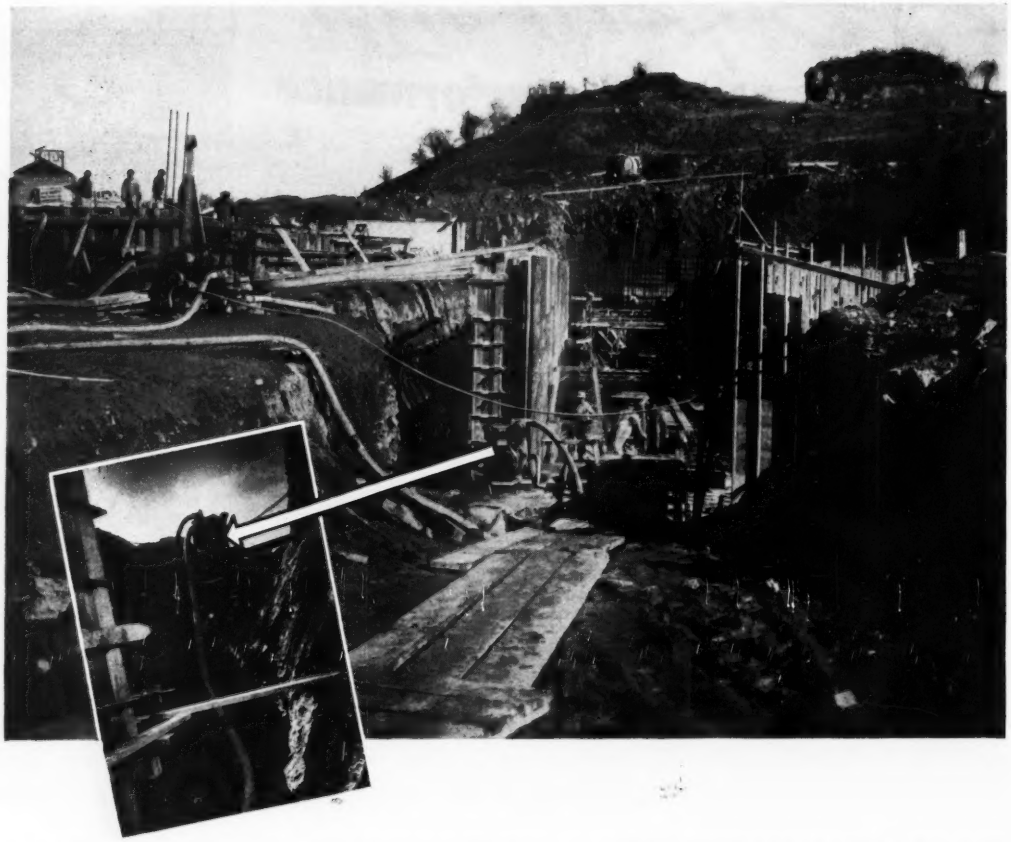
Get the complete story of the many additional features of these outstanding graders from your A-W distributor, or send for the latest bulletins.

AUSTIN-WESTERN COMPANY, AURORA, ILL., U.S.A.

BUILDERS OF ROAD MACHINERY

Austin Western

SINCE 1859



WATER MEANS TROUBLE TO A CONSTRUCTION MAN

Drainage and seepage water can be a big headache. It has to be handled in varying quantities on nearly every construction job. For instance, on the foundation work on this hillside factory building in North Bergen, New Jersey, the contractor had to contend with plenty of drainage. Mahony-Troast Construction Co., handling the job, had to keep the water down throughout a winter of snow, sleet, thaw and rain. The contractor wanted it handled without trouble and without a lot of bothersome maintenance.

On this job, as on many others, for the main pumping work this contractor used a Marlow Water Wizard Self-Priming Centrifugal Pump.

The Water Wizard never caused trouble. It never needed attention. Suction lifts varied from 18 to 27 feet and still there was never a halt in its smooth, even pumping. And when the Water Wizard got down to mud, a Marlow Mud Hog diaphragm pump joined in the drying work.

Performance like this is typical. The stamina and dependability of a Marlow Water Wizard can't be beat. It primes itself. There are no parts to jam or cause trouble. It pumps with the same high efficiency in either continuous or intermittent service. And to top it all, a Water Wizard is economical to operate.

You'll find it worth your while to learn why more and more contractors rely on Marlows, the World's largest line of construction pumps. Ask your nearest Marlow distributor or write the factory.

OUR 25th YEAR 1924-1949

MARLOW PUMPS
RIDGEWOOD • NEW JERSEY

(Continued from page 152)
suit, which may be brought outside state workmen's compensation statutes. In addition, should we do work on Federal Inland Waterways or certain harbors, we must place additional coverage under Section 32 of Federal Longshoremen's and Harbor Workers' Compensation Law.

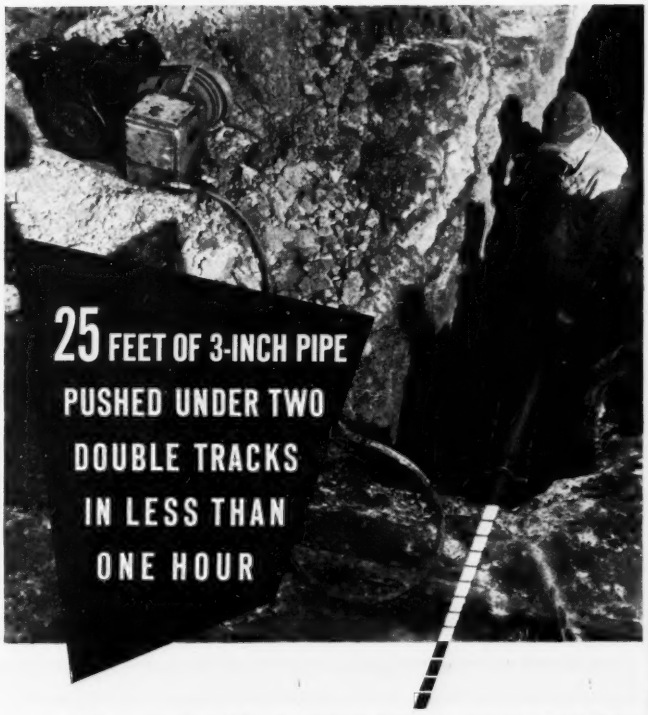
Rates for these various policies are applied against the amounts of payroll expenditures (at straight time rates) for the various types of work our men perform. For example, the greater hazard of steel erection over office work is apparent, and calls for a much higher rate. We make reports of our expenditures on different classes of work periodically (usually quarterly, but sometimes annually), the insurance company then bills us, and makes a final audit of our reports after the annual renewal date of our policies.

2. *Comprehensive General Liability*—We carry, by general geographical areas, policies giving automatic coverage of the protections listed in (a), (b), (c) and (e), below. These are endorsed to give specific coverage when we get jobs. In addition, certain special coverages like blasting explosions, excavating where utility lines are present, and so on, may be added by endorsement. Other special coverages of liability risks, such as (f) and (g) below, are added by separate General Liability policies, when needed. Our Comprehensive General Liability policies are broad, and carry high limits. We have tried to obtain automatic protection in case of forgetfulness or overlooking obscure hazards in new jobs, but no substitute has been found for an alert and careful examination of specifications and conditions when bidding jobs. Our insurance advisers in Minneapolis, New York and Oakland are always available in this regard. Premiums are based on payrolls, and determined in the same manner as W.C.

(a) *Bodily Injury*—This refers to our libility for damage to persons by accidents resulting from our operations. All our policies carry high limits as an established company practice. Successive accidents, or coincidental accidents at different locations or on separate jobs under the same policy do not reduce the limits.

(b) *Property Damage*—This covers our liability for damage to property from accidents resulting from our

(Continued on page 156)



...with a GREENLEE HYDRAULIC PIPE PUSHER

"We made this fast, under-railway installation during a near-zero spell," reports Harris-McBurney Co. of Jackson, Michigan. "And without the GREENLEE Pusher and Power Pump we would not have otherwise even attempted the job.

"During the past three years we have used the GREENLEE Pusher to install many thousands of feet of pipe and telephone cable conduit under airport runways, streets, railways, and highways.

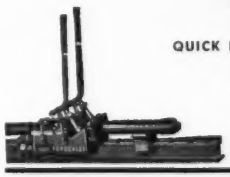
"By no means could these jobs have been done as efficiently, quickly, or at as low cost as with a GREENLEE. Ours paid for itself on the first job."

You, too, can make big time and labor savings with a GREENLEE which *pushes* pipe under obstructions. Eliminates extensive ditching since just a short trench accommodates the Pusher —no tearing up, backfilling, tamping, tunneling, repaving.

Get facts today on this timesaving, efficient tool. Write Greenlee Tool Co., Division of Greenlee Bros. & Co., 2184 Columbia Avenue, Rockford, Illinois, U. S. A.

TOOLS FOR CRAFTSMEN

GREENLEE



QUICK FACTS ABOUT THE GREENLEE HYDRAULIC PIPE PUSHER

Easy — one or two men can easily operate on any job. *Portable* — compact, easy to carry to job and set up. *Fast* — operates at six different speeds. *Two models* — (1) for pipe up to 4-inch; (2) for larger pipe, drainage ducts, concrete sewer pipe. Do the job easier, quicker with a GREENLEE.

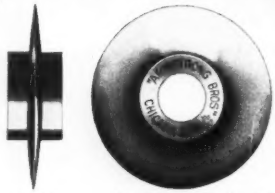
EASY TO CARRY
a real producer

JACKSON
MODEL FS-7A
CONCRETE VIBRATOR

Equipped with a 1¼ H.P. Universal, 115 volt motor producing up to 10,000 V.P.M.; double hand grip-skid type base and toggle switch. Available with either 1¾" x 17", or 2" x 10" vibrator head, and shafting in 24", 36" or 7' lengths; quickly attachable wet or dry grinder. Light enough to be easily carried Powerful enough to be a big producer on a wide variety of construction. Write for details.

ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Mich.

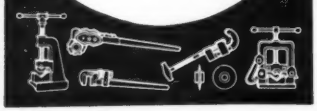
Cut Faster, Stay Sharp



Machined from special alloy tool steel, oil tempered and hardened, ARMSTRONG BROS. Knife Blade Cutter Wheels, penetrate pipe easily, cut smoothly and rapidly, and hold their keen edge. They come in sizes and types for all makes of pipe cutters.

Write for New S-48 Catalog, just released.

ARMSTRONG BROS. TOOL CO.
5234 W. Armstrong Ave., Chicago 30, U.S.A.
Eastern Whse. and Sales: 199 Lafayette St., New York 12, N. Y.
Pacific Whse. and Sales Office: 1275 Mission St., San Francisco 3, Calif.



HOW TO ESTIMATE CONSTRUCTION COSTS

A guide to sound bids

SAMPLE CHAPTERS

—Estimating In General
—Handling and Transporting
—Excavation
—Concrete
—Masonry
—Roofing and Flashing
—Lathing and Plastering
—Plumbing
—Overhead and Profit
—Complete Estimates
—Approximate Estimates

Revised 2nd Edition
By H. E. Pulver
Civil and Structural Engineer
653 pages, scores of tables,
$6.00

A reliable working guide that covers every element to be considered in bidding for a construction job. It includes step-by-step procedures for computing accurate estimates on concrete work, steel, electrical installation . . . any kind of construction you're apt to meet in modern building plans. Practical examples of estimates worked out in detail demonstrate how to apply the methods outlined.

10 DAYS' FREE EXAMINATION

McGraw-Hill Book Co., Inc., 330 W. 42 St., NYC 18
Send me Pulver's CONSTRUCTION ESTIMATES AND COSTS for 10 days' examination on approval. In 10 days I will remit $6.00, plus a few cents delivery charge, or return the book postpaid.*

Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position CM-4-49

SAVE! We pay delivery charge if you send cash with this coupon. Same return privilege.

(Continued from page 155)

operations. Here, also, we carry high standard limits—$100/100. Same general comment as (a).

(c) *Contractor's Protective*—This is a sort of "loophole" coverage protecting us for liability from bodily injury and property damage done by a subcontractor. Our standard subcontract form requires that we be furnished by the sub, certificates showing satisfactory coverage. We can still be named in suits, and have to furnish legal defense; or the damage may come to a greater amount than the insurance we can reasonably require the sub to carry; or it may be held that we contributed to the cause of the accident, and a joint judgment obtained.

(d) *Products Liability*—This protects us and the owner against damage claims based on faulty execution of the work, continuing for a stated period after completion of work. Flat premium is charged.

(e) *Contractual Liability*—Under some contracts we assume liability that would not ordinarily fall on us under common law. We may become responsible for the acts of state highway department officials and employees. Or we may accept liability for all damage of any nature from the performance of our work, from any cause. The latter goes beyond the coverage provided in our policies, even by endorsement, because the insurance companies have never consented to go beyond damage from accident. The procedure is to present the contract to the insurance company for premium determination when such contract contains assumed liability clauses. If we think the premium is too high for the risk, we have such coverage excluded. If the insurance company refuses to write an endorsement covering our full assumed risk (as has happened), we have very little recourse. In bidding, study specifications carefully for contractual liability clauses.

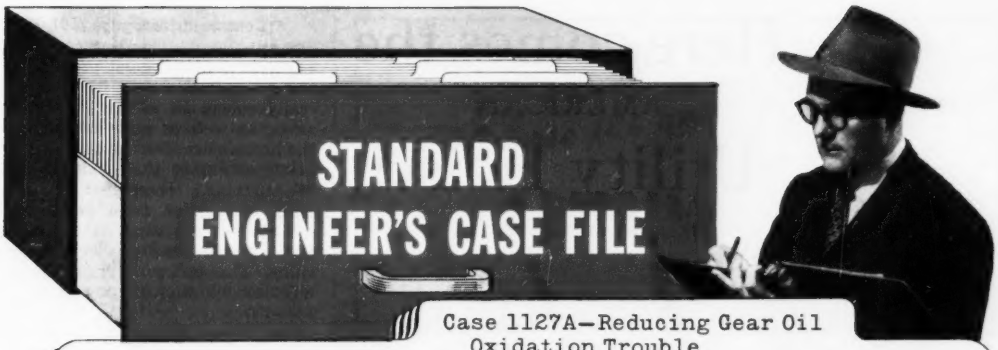
(f) *Owners Protective*—This coverage protects the interest of the owner if he is named in a damage liability suit. It is written as a separate policy rather than by endorsement, but has an effect similar to naming the owner as an additional assured under our General Liability Policies. This coverage is placed only when required by contract.

(g) *Owners, Landlords and Tenants Liability*—Protects the landlord if we lease a siding, yard, or any other premises. Written as a separate policy, but only when the landlord or owner insists do we buy such coverage.

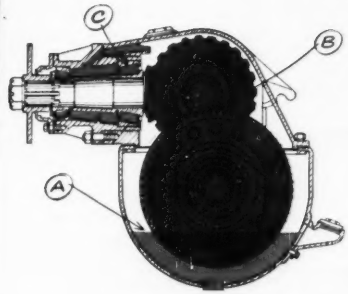
EMPLOYEE BONDS

Fidelity, or Blanket Position

(Continued on page 158)



Case 1127A—Reducing Gear Oil Oxidation Trouble



DIFFERENTIAL GEARS

RPM Gear Oil in automotive gears requiring straight mineral oil practically eliminated deposit formation. Recommended for conventional gears where manufacturers specify uncompounded lubricant. Comes in three grades: SAE 90, 140, 250.

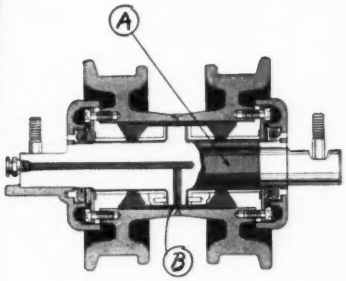
A. Made from selected paraffinic oil stocks—highly resistant to extreme temperatures and oxidation.

B. Provides tough lubricating film—withstands moderately severe gear tooth pressures and shock loads.

C. Will not corrode bronze bushings, bearings or other parts.

RPM Gear Oil contains a very effective foam inhibitor which prevents air bubbles from forming and building up pressure in cases. A low pour-point permits easy flowing in zero weather.

Case 1124—Maintaining Lubricating Film on Tractor Rollers



CATERPILLAR TRACK ROLLER BEARING

When track-roller bearings in a Caterpillar doing heavy-duty dirt moving were lubricated regularly with RPM Tractor Roller Lubricant, their service lives were noticeably extended. Efficient in all climates. To meet various conditions, it comes in three grades: Light, Medium and Heavy.

A. Contains a highly effective chemical anti-wear agent.

B. Has new stringiness agent—resists extreme pressure and constantly changing shock loads, controls flow of lubricant through bearings and keeps film on bearing surfaces.

RPM Tractor Roller Lubricant is resistant to water and helps seals keep out grit and dust.

A special kind of this outstanding product, RPM Tractor Roller Lubricant A.C. Type is made for Allis-Chalmers tractors.

For additional information and the name of your nearest Distributor, write

STANDARD OIL COMPANY OF CALIFORNIA
225 Bush Street, San Francisco 20, California

The California Oil Company
Barber, New Jersey

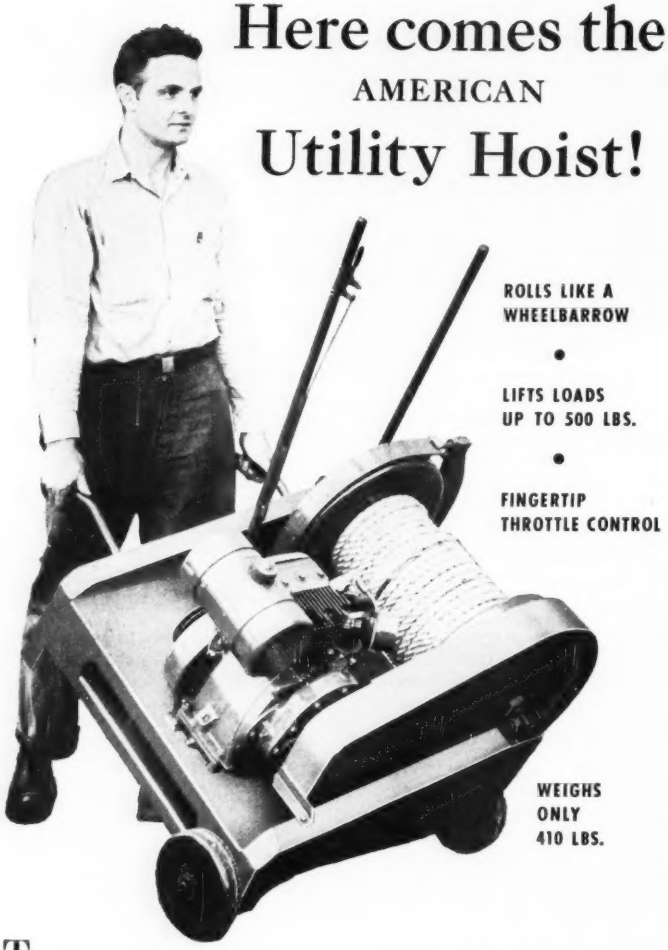
The California Company
17th and Stout Streets, Denver 1, Colo.

Standard Oil Company of Texas
El Paso, Texas

RPM

Trademark Reg. U.S. Pat. Office

Here comes the AMERICAN Utility Hoist!



The AMERICAN UTILITY HOIST will lift brick, tools, cement blocks, roofing or any other load up to 500 lbs. more profitably than any big hoist on the market. And compared to hand work, it's worth two or three extra men on the payroll.

Here, at last, is a light hoist that's an all-around performer, offering exactly the kind of speed and power you need. The drum will spool 1700 feet of $^3/_8$" wire rope, or 400 feet of $^3/_4$" manila. With standard gearing it lifts 500 lb. loads at 200 feet per minute. If you want extra power, order special gearing to handle 650 lbs. at 150 FPM; or for extra speed you can have it geared for 200 lbs. at 500 FPM.

This hoist goes anywhere . . . and anybody can run it. Haul it on a light truck . . . wheel it to the job like a wheelbarrow . . . counterweight it with a heavy plank in the slotted frame, and you're ready for work. Fingertip throttle control is right on the brake lever. Has 14" disc clutch, 16" external band brake, governor-controlled air cooled engine. Immediate delivery from stock. Call your distributor, or write us direct, for catalog.

American Hoist
and DERRICK COMPANY
St. Paul 1, Minnesota

Plant No. 2: So. Kearny, N. J.

Sales Offices: NEW YORK, CHICAGO, PITTSBURGH

AMERICAN HOIST & Derrick Co. 2
ST. PAUL 1, MINNESOTA

Please send literature and prices on the AMERICAN Utility Hoist.

Name _____

Company _____

Address _____

City _____ State _____

9115

(Continued from page 156)

Honesty Bond—This is a continuing policy, with annual premiums, but no expiration date. It automatically covers all of our job locations, as well as area offices and the home office. Our coverage is on positions rather than individuals. We obtain a completed fidelity bond application from each new incumbent of a supervisory position, or a responsible clerical position. This policy covers theft, or any other kind of dishonesty, on a broad form.

Forgery—All locations are automatically covered in a minimum amount of $10,000 each. This protects against payroll and check discrepancies. Fictitious payee, impersonation, forged or improper endorsement, and, of course, forged payment signature, whether manual or machine, are all covered.

OFFICE MACHINES FLOATER

This is an all-risk policy covering a schedule of specific office machines and equipment. All jobs and permanent offices are covered. The annual list of office machines sent to the home office by each job and area office on January 1, furnishes the schedule of items under this policy.

BANK ACCOUNT PROTECTION POLICY

The Todd Co. furnishes this policy issued by the U. S. Guarantee Company. It protects against tampering with their checks.

Insurance Written to Meet Needs of Specific Jobs

Builders' Risk—Broad Form Fire and Extended Coverage—(Fire, windstorm, cyclone, tornado and hail, explosion, riot, riot attending a strike, civil commotion, aircraft, smoke, and vehicles). This coverage is always carried on our building jobs and sometimes on highway work where structural risks are involved. Same applies on heavy construction, which is more frequently covered than highway work. Rates are nearly always set by state bureaus. Builders risk excludes excavation and below grade foundations. We generally buy it on a completed value basis, which means that a comparatively low annual rate is applied against the completed "insurable" value. Occasionally we carry it on a monthly reporting basis. This means we

must report monthly the value of work completed, plus materials at the site. When a job moves forward toward completion at a steady and satisfactory rate of progress, the completed value basis is more convenient, eliminates questions as to correct reporting of values, and is no more expensive. Otherwise the reporting basis is usually much cheaper. We seldom, if ever, use the arbitrary flat amount basis. Regardless of the rating basis, this coverage applies to the value of labor and materials (including overhead, bond and profit) incorporated into the work, plus those at the site within 200 ft. of the work. Temporary buildings, equipment, and materials in transit to the site or stored elsewhere, are covered under our Equipment Floater.

(1) *Vandalism and Malicious Mischief*—This is an additional extended coverage, self-explanatory, which we generally add by endorsement.

(2) *Earthquake*—Added by endorsement where it appears a hazard exists.

(3) *War Damage*—Added as needed.

(4) *Flood, Rising Water Damage, Tidal Wave, and other Marine Coverage*—Decision on buying this coverage depends on the analysis of hazard made by the area manager; on whether the desired coverage can be placed; and the premium asked by the insurance company. Such risks are individual, and each one is separately rated without the benefit of exactly comparable experience such as is available with fire insurance. This sometimes makes the insurors reluctant to offer coverage or raises the rates higher than we consider we can afford. Marine Builders' Risk is very tricky insurance and must always be examined by the home office and Cobb-Strecker-Miller before being bought.

INSTALLATION FLOATER

Covers our liability for damage of any sort to property of others while in process of being installed, from the time we take possession (at rail siding, job site, etc.) until installation is completed. Usually a policy is required when heavy equipment (generators, for example) is installed.

LEGAL LIABILITY

This coverage is seldom called for on highway work, but should always be thought about on building construction or heavy construction. It protects us from

(Continued on page 160)

Of Course it's an

OMAHA DRAGLINE BUCKETS

A Bonus Yard... In Every Cast

In OMAHA Dragline Buckets all dead weight has been eliminated—a Bigger payload built in! This means profits on the job and on the job record. Omaha Buckets fill easily—within 1½ to 3 bucket lengths. No recasting—no time wasted changing positions. You'll get Bigger Payloads and Greater Profits with Omaha Buckets.

Write for Complete Catalog

DRAKE-WILLIAMS-MOUNT • OMAHA, NEBR.

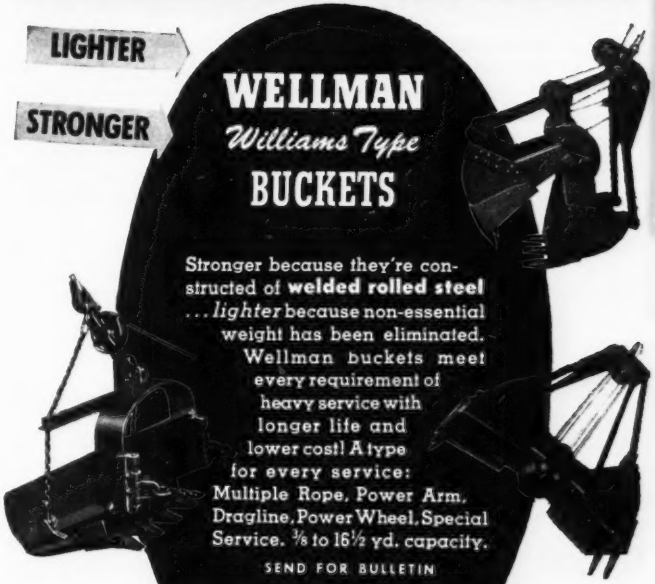
LIGHTER

STRONGER

WELLMAN

Williams Type

BUCKETS



Stronger because they're constructed of **welded rolled steel** ...*lighter* because non-essential weight has been eliminated. Wellman buckets meet every requirement of heavy service with longer life and lower cost! A type for every service: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service. ⅜ to 16½ yd. capacity.

SEND FOR BULLETIN

THE WELLMAN ENGINEERING COMPANY
7017 CENTRAL AVENUE • CLEVELAND 4, OHIO

HERE'S Your Answer
—TO LOWER COSTS
—TO GREATER SAFETY
On All Jacking Jobs

Use **SIMPLEX** Ratchet Lowering **JACKS**

Simplex No. 22 Jack shown above lifts full 10 ton capacity on cap or toe with versatility typical of the complete Simplex line.

SAFER, FASTER ACTION SAVES TIME AND MANPOWER

Maximum power and safety! Easier, faster operation! Greater versatility! Longer service! These are the qualities that put Simplex Ratchet Lowering Jacks at the top of the list today for *safe* savings on construction jacking.

Simplex engineering gives these Simplex Jacks the foolproof advantages of a smooth, positive working ratchet and pawl mechanism with adjustable cadmium plated springs, plus rugged construction at every point that adds years to jack life. All models lift full capacity *on cap or toe*. Capacities from 1½ to 35 tons. Send for Bulletin: Industrial 49.

NEW DESIGN! NEW EFFICIENCY!

SIMPLEX HYDRAULIC JACKS

Here's easy acting, *safe* hydraulic jacking power. Simplex Hydraulic Jacks operate in either horizontal or vertical position; are easily portable and produce maximum power with minimum weight. High pressure packing seals of Neoprene; single pump (or double pump on larger capacity models) action; spring controlled, non-sticking valves. Eight models in capacities from 3 to 100 tons. Safety tested to 50% over rated capacities. Send for Bulletin: Hydraulic 48.

Model 100 HJ
100 Tons Cap.

Model 12 HJ
12 Tons Cap.

1899 Fifty Years 1949

Simplex
LEVER · SCREW · HYDRAULIC
Jacks

TEMPLETON, KENLY & COMPANY
1008 South Central Ave., Chicago 44, Illinois

(Continued from page 159)

losses that might be incurred by contiguous property as a result of carelessness or faulty trade practices. It also protects us when sued without negligence or poor practice on our part being shown. Even if damaged property is fully covered, we could be held liable. Although we feel that the rates are rather high (usually 50 percent of fire rates) suits are becoming more prevalent along this line. The situation should be watched when there are adjacent or nearby buildings on the job you are bidding.

EXPLOSION ON PRESSURE TANKS

This coverage is sometimes required under state laws. It applies to air tanks or steam tanks, and presumably to other types as well. The premium covers accidents, but mainly pays for periodic inspections and whatever certificates are necessary.

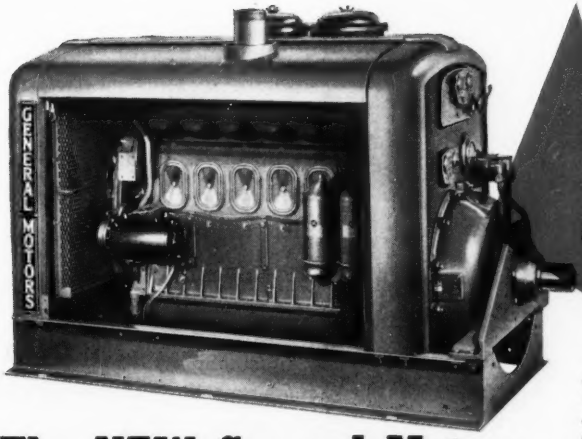
PERFORMANCE AND PAYMENT BONDS

Performance Bond to Owner—Such a bond guarantees to an owner payment of damages incurred by failure of the contractor to perform his contractual obligations. Premium is based on an established rate applied to the lump sum or guaranteed maximum amount of the contract. Almost all lump sum or guaranteed price contracts call for furnishing such bonds. The relationship between the bonding company and the contractor becomes one similar to that "credit" relation existing between the contractor and his banker. The willingness of the bonding company to "extend credit" (or furnish the needed bond) is based on the financial status of the contractor, his integrity, and how well he is prepared, both in equipment and experience, to complete the particular job. Consequently doing favorable business with one bonding company for years should induce reciprocity.

Payment Bond to Owner—Such bonds guarantee that the contractor will pay all just debts incurred by him for materials, labor and services incorporated in the job concerned. Other remarks under "Performance Bond" apply here as well.

Bonds Furnished by Subcon-

(Continued on page 163)

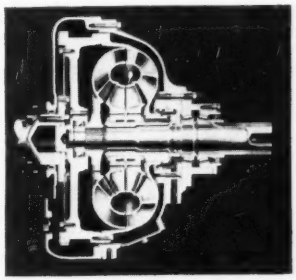


A Combination Torque Converter and Fluid Coupling *Integral with the Engine*

General Motors 71 Diesels equipped with the new GM Torque Converter take up no more space or weight than the same engines with conventional friction clutch and power take-off. Available in 3-, 4-, and 6-cylinder single engine units, Twin 4 and Twin 6 models having engine ratings from 75 to 300 H.P.

The NEW General Motors DIESEL ENGINE-TORQUE CONVERTER UNIT

HERE is a complete, integrated Diesel engine-torque converter unit that combines the inherent efficiency of the GM 2-cycle Diesel engine with the features and advantages of *both* torque converter and fluid coupling. It provides *torque multiplication up to 4 to 1* for starting variable heavy loads. It also provides *highly efficient transmission of power* during light load periods by *automatically shifting to fluid coupling* in the upper speed range.



In the new GM Torque Converter, oil does the work. Automatic transition from torque multiplication of 4:1 at stall to 1:1 in upper speed range.

A smooth, uninterrupted flow of power, delivered through a liquid, *prevents engine stalling* under any load and *protects both engine and driven machinery from sudden shocks.*

One Manufacturer—One Responsibility

Up to now most engines and hydraulic drives have been separate units. The result—compromise designs and divided responsibility. Now General Motors offers a new torque converter specifically designed and manufactured as an integral part of the General Motors Series 71 Diesel engine. It is a self-contained unit built by one manufacturer providing a long needed saving in space and weight as well as certain desirable operating characteristics not available before.

This new power unit will get the most work done in the least time because the engine operates in its most efficient speed range at all times—delivering maximum engine horsepower regardless of the speed of the load. *Maximum torque to start heavy loads PLUS maximum horsepower to keep the load moving.*

Everyone with a hard job to do in the oil fields, in construction, in mining or in logging should have all the facts about this compact, flexible GM Diesel Engine Torque Converter unit. *Write today for a complete description.*

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES . Up to 200 H.P. DETROIT 28, MICHIGAN MULTIPLE UNITS . . Up to 800 H.P.

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK

GM GENERAL MOTORS DIESEL POWER

"WHO'S IN CHARGE HERE?"

You are—you, the customer. You're the one who brought about the formation of the Truck Mixer Manufacturers Bureau.

You didn't like the multiplicity of sizes and capacities of truck mixers. You didn't like the constant changes in capacity that meant that your machines became obsolete in a hurry. You didn't like not being able to bid accurately and figure your truck mixer costs accurately. Your collective, justified complaint demanded that something be done.

And it was. We organized the Truck Mixer Manufacturers Bureau to set up standards that guaranteed size and capacity. We put a rating plate on the side of each truck mixer so that you could see how large it was, buy on mechanical merit, and figure your operating costs easily.

So look for that rating plate. It's your guarantee of size and accuracy . . . your guarantee that you're in charge here.

2 CUBIC YARD MIXER
GUARANTEED TO HOLD, MIX AND AGITATE ITS RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
3 CUBIC YARD AGITATOR
N.R.M.C.A. REGISTRY No.

Truck Mixer Manufacturers Bureau

Affiliated with The National Ready Mixed Concrete Association

BLAW-KNOX DIVISION
Pittsburgh, Pa.

CHAIN BELT COMPANY
Milwaukee, Wis.

CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.

THE JAEGER MACHINE COMPANY
Columbus, Ohio

WORTHINGTON PUMP AND MACHINERY CORPORATION
RANSOME DIVISION
Dunellen, N. J.

THE T. L. SMITH COMPANY
Milwaukee, Wis.

(Continued from page 160)

tractors to General Contractor—We may request either performance or payment bonds or both, from our subcontractors. These are identical with the bonds above that we furnish to owners. The sub is ordinarily permitted to obtain his bond through his usual source, and oftentimes we prefer that he do so. However, we require sub bonds to be on a form furnished by ourselves, or approved by our insurance counsellor. Requiring him to buy a bond from the bonding company used by ourselves might result in our arranging for "loss business." Such events could lead to weakening our own reputation with our bonding company.

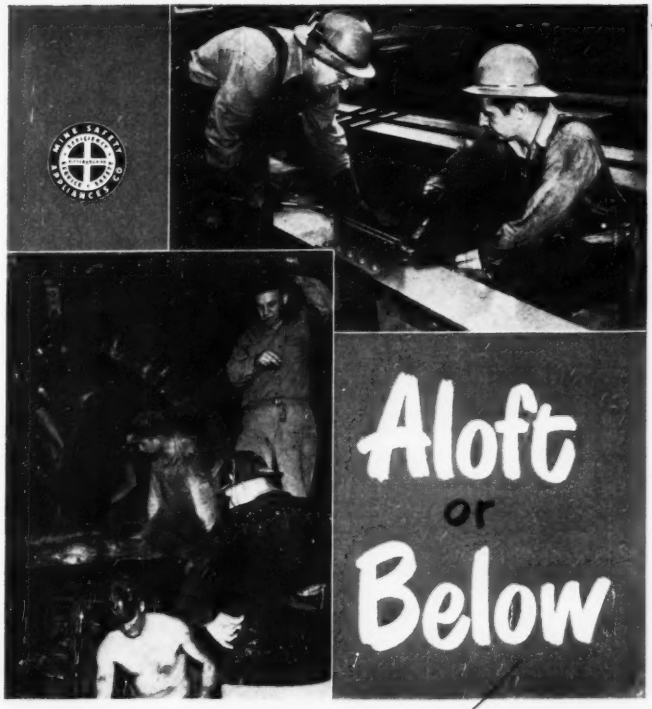
General Note—This list is not complete. When preparing an estimate, or starting a new job, go over your operations from the standpoint of all risks. Remember the standard company practice on insurance is to cover ourselves fully whenever a catastrophe, or large loss is possible. When in doubt, ask the area office, the near-by insurance agent, or the home office. Cobb-Strecker-Miller, our chief agents, are ready for consultation at any time and any place. They know the construction field, and our own practices and problems from many years of close association. You can trust them to look after our own interests as nearly 100 percent as possible.

SUPPLEMENT . . . "Stores" Account

Our Form No. 2, "Requisition on Purchasing Department," is seldom used as such. It has been suggested that it be used as a "Requisition on Stores," for big jobs where the stores account becomes important. Such an account becomes important in making a correct distribution of materials cost, in protecting special items from diversion to the wrong use, and in safeguarding materials from pilfering, waste, and over buying.

The cost distribution of lumber, as an example, becomes impossible to make from invoices when one has forms, scaffolding, temporary buildings, framing, and a dozen other mixed uses for one purchase. So all lumber would be charged to a Stores Account when bought, and charged to various work features as drawn out for use. The Stores Requisition is used by the

(Continued on page 164)



it's M·S·A

SKULLGARDS

for better Head Safety!

On *every* construction job where the danger of falling objects, obstructions or confined spaces expose heads to injury, M.S.A. Skullgards provide proved, dependable protection!

Used by the hundreds of thousands throughout the construction industry, these favorite work hats interpose the high fracture-resistant strength of high-pressure molded, laminated bakelite between danger and the worker's head—correctly designed with high crown for ample head clearance; shock-absorbing inner head cradle; flexible long-wearing sweatband; self-ventilation coolness.

M.S.A. Skullgards are non-deteriorating from exposure to water, perspiration, grease, or common chemicals, have a high dielectric strength, and are available in all standard or adjustable hat sizes. Write for details on these light-weight, easy to wear work hats—ask for Bulletin DK-13.

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STREETS · PITTSBURGH 8, PA.
At Your Service:
54 BRANCH OFFICES IN THE UNITED STATES AND CANADA

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BUY A BUCKET THAT USES FULL CRANE CAPACITY

Maximum return on your crane investment depends upon selecting the clamshell bucket that will utilize full crane capacity. First, determine the *allowable gross load capacity* of your crane, available *closing line pull*, and *cable sizes*. Check the *character of the material* to be handled . . . weight per cu. ft., size and shape of pieces, compaction, etc. Then select the *type* and *weight* of bucket that will result in the greatest possible tonnage from your crane equipment. Blaw-Knox can give you the engineering service that will enable you to establish a higher ratio between bucket performance and payload and suggest correct use of the proper accessories to adapt your Blaw-Knox bucket to peak efficiency on your operations. Send for Catalog 2076.

BLAW-KNOX DIVISION of Blaw-Knox Company
2086 Farmers Bank Bldg., Pittsburgh 22, Pa.

BLAW-KNOX CLAMSHELL BUCKETS
THE MOST COMPLETE RANGE OF SIZES AND TYPES

These special drafting techniques help you

Develop skill in preparing working drawings for everyday jobs

WHATEVER your connection with the construction field, skill in using drafting tools and techniques insures a better understanding of your work and a greater chance for advancement. This book shows how to draw details, plans and elevations . . . how to put your ideas down on paper. It discusses every phase of modern architectural drafting . . . helps you prepare simple working drawings, read blueprints accurately, and understand more clearly the technical aspects of modern building practice.

JUST PUBLISHED!

ARCHITECTURAL DRAWING FOR THE BUILDING TRADES

By JOSEPH E. KENNEY and JOHN P. McGRAIL

128 pages, 9 x 12, 92 illustrations, $3.00

This guide emphasizes actual drafting procedures—shows you how to use drafting instruments most effectively, and make perspective, isometric, oblique, and cabinet perspective drawings. Tested and proven short-cuts point out how to lay out floor plans, draw elevations, construct exterior doors in brick walls and in frame buildings.

Check this book for specific drafting information on:

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- fireplaces
- schedules
- conventions
- cornices
- corner windows
- steps
- doors
- sills
- concrete walls
- solid brick walls
- brick veneer walls

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Name .....
Address .....
City ..... Zone ..... State .....
Company .....
Position CM-4-49

(Continued from page 163)

foreman to obtain his materials from the warehouse, by the storekeeper to control his inventory, and by the home office to make the cost accounting entry.

Then, too, with materials routed through a Stores Account, the storekeeper can eliminate diversion of special items. For example, certain locks may be for certain doors. The storekeeper will see to it that an extra fancy lock is not put on a tool shed, thus leaving the contractor short one fancy lock. The same system, augmented by adequate physical storage facilities, will cut down on both waste and petty theft.

WORK ORDERS

Disputes seldom arise when we invoice subs, vendors, outside contractors or others for work requested by them in writing. It is a guiding principle to get an authorized signature on written requests for all such services or materials furnished. This class of charges is comparatively simple if that rule is followed.

A second group of charges is for phone calls, electric light and water, or routine use of cranes for unloading or trucks for material handling. Sometimes a blanket order can be written in advance for all services of a continuing kind. Phone calls can be signed for as made, or paid in cash. Tickets can be signed for equipment services as used. For this class of charges, the difficulty is in our forgetting to bill for them, or in the one who received the service forgetting about it when the bill comes in. A simple system of getting signed tickets helps in both respects.

A third type of charge occurs when a sub fails to do his work properly, or to clean up afterwards. A change in our subcontract form has been suggested to make stronger the clause giving us the right to make back charges for cleanup and the like. On building jobs it is easy to get into arguments on this score. Give notice to the sub of what we propose to do in advance, when possible.

ADDENDUM No. 4

Fair Labor Standards Act, Section 7—Maximum Hours and Overtime Compensation. (EDITOR'S NOTE: Since the Fair Labor Standards Act (1938) and the Taft-Hartley Law (1947) are at present subject to congressional revision or repeal, this section will not be treated.)

CREATING *nothing* TO ASSURE LONG LASTING SERVICE

QUAKER HOSE IS VACUUM "PRE-TESTED" FOR STRENGTH OF WALLS . . . DURABILITY IN TOUGH SERVICE

If it has the Quaker trade-mark, it must be right. Each type of hose must meet rigid "pre-tests" before it is shipped for service in the Construction Industry. Scientific pre-tests that subject hose to torture-tests more severe than will ever be encountered in the toughest service, are conducted right in Quaker plants.

One of these steps in "pre-testing" Quaker Hose is shown above. A vacuum test that puts Quaker Hose through the paces to provide rubber products for the Construction Industry that are second to none in quality.

This is only one of the eighteen rigid tests that raw materials and finished products must pass before receiving the Quaker stamp of approval. Yes, "pre-testing" of Quaker belting, hose and packings provides quality, and long service . . . assures worthwhile dividends for your operations through less time outs for maintenance, higher efficiency, lower cost per hour.

PACKINGS THAT PRESERVE POWER

Quaker pump packings are pre-tested for size, shape and quality to assure perfect fit, long service, maximum power.

BELTS THAT BOOST POWER

Quaker's complete line of conveyor and transmission belting for every requirement in the Construction Industry, is pre-tested and service-proved to provide sure-grip . . . slip less . . . save power

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QUAKER RUBBER CORPORATION
PHILADELPHIA
QUALITY SINCE 1885

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Featuring Additional Products, Specialties & Services for the Construction Industry

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WELL POINT SYSTEMS
WILL DRY UP ANY EXCAVATION
Faster—More Economically
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STERLING QUALITY
SIMPLE DEPENDABLE RUGGED
WRITE NOW
CHOICE OF LEADING CONTRACTORS EVERYWHERE
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Waterproof with Formula No. 640
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts cost: applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

ATLAS CONCRETE FORMS
Walls • Cylinders • Floors • Sewers
Irvington FORM & TANK CORP.
Irvington, N. Y.

This
WHERE TO BUY
Section
supplements other advertising in this issue with these additional announcements of products and services essential to official and economical operation in the construction industry.

SEARCHLIGHT SECTION

(Classified Advertising)

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Business : : Used or resale

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An advertising inch is measured ⅞" vertically on one column, 3 columns—30 inches—to a page.

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CHICAGO: 520 N. Michigan Ave. (11)
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ENGINEERS: LARGE college offers $3000, approx. half time teaching-studying. All ranks univ. positions, experienced $4500-$6500 nine months. Give phone, photo, qualifications. Cline Teachers Agency, East Lansing, Mich.

FULL VIEW . . . JOB AHEAD WITH SITTING COMFORT

Living room comfort in a chair designed for Power Shovels, Cranes, Tractors, Graders, etc.

All metal . . . can be raised from 19" to 28" by hand lever. Seat moves forward or backward. Chair bolts down tight. Built for government . . . stands hard service.
Now selling at $15 for below the price of production.
WEIL'S
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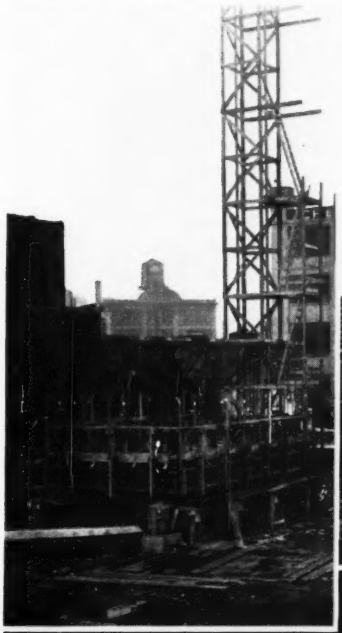
3-bin grain storage silo of Burke Brewery, Inc., Long Island City, N. Y. Outside dimensions are 30'4" x 15'4" with 8" walls of concrete made with Lehigh Early Strength Cement. Height of 1st cutback, 57'2" 2nd, 68' . . . 3rd, 82'3".

CONTRACTOR—Wm. B. Neill, Inc., 30 Vesey St., New York, N. Y.

DEALER—Supro Building Products Co., 4816 70th St., Woodside, N. Y.

JANUARY 17, 1949



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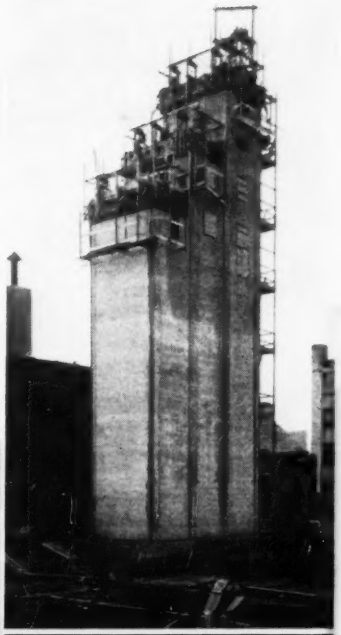
JANUARY 22, 1949



from start to finish in less than 5 days with

LEHIGH EARLY STRENGTH CEMENT

Here's a good example of how speed can be put in a job by using Lehigh Early Strength Cement. At 12:30 P.M. on Monday, January 17, 1949, the first pour was made for the 3-bin concrete silo of the Burke Brewery, Inc., Long Island City, N. Y. Less than 5 days later on Saturday at 10:30 A.M. the walls of the 82'3" high structure were topped out.

Weather conditions were none too good. Typical winter temperatures prevailed. And during the last two days of pour, there was intermittent rain, sleet and snow. Yet the work went on.

Save time . . . save money . . . use Lehigh Early Strength Cement for all construction where close building schedules must be maintained. Our Service Department will be glad to help you with your specific problems.

Lehigh CEMENTS

LEHIGH PORTLAND CEMENT COMPANY • ALLENTOWN, PA. • CHICAGO, ILL. • SPOKANE, WASH.

LEHIGH PORTLAND CEMENT • LEHIGH EARLY STRENGTH CEMENT • LEHIGH AIR-ENTRAINING CEMENT • LEHIGH MORTAR CEMENT

PERFECTION

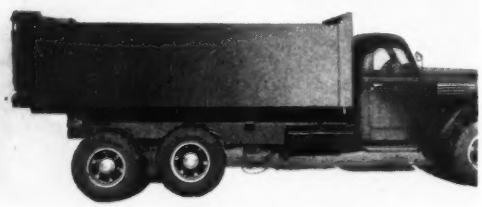
IS THE NAME TO REMEMBER WHEN YOU WANT--

ENGINEERED-TO-THE-JOB

BODY AND HOIST CONSTRUCTION

Photos show PERFECTION No. 354 Special Dump Body and No. 1027 Iso-Draulic Roll-A-Lift mounted on International truck. Length of body 192", width 96", capacity 16 yds. Can be made in various sizes.

On this PERFECTION Body the triangular side braces are placed on the INSIDE of the side plates--permitting the sides to be mounted flush with edges of the platform. This design increases the inside dimension between sides almost one foot, resulting in greater volume capacity. In comparison with bodies having outside braces, this design also has the advantage of permitting the use of a smaller body for any given volume capacity requirement. This reduction in body size may be in height, length or width, as desired



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THE PERFECTION STEEL BODY CO.

GALION, OHIO, U. S. A.

PERFECTION STAKE and DUMP BODIES HYDRAULIC HOISTS

FOR ANY TRUCK STANDARD or SPECIAL UNITS IN ALL SIZES • FOR ANY USE

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Canadian National Exhibition Grandstand, Toronto, Ontario. Architects—Marani and Morris; Consulting Engineer—Gordon Wallace; Contractors—Pigott Construction Co., Ltd., all of Toronto, Ontario.

Minimized SHRINKAGE, *Great* DURABILITY WITH POZZOLITH CONCRETE

Minimum volume change and long life under severe weather conditions were important concrete requirements to be met in the construction of this Canadian National Exhibition grandstand. Pozzolith, cement dispersion; widely used in building stadia*, provided these requirements and the following *plus* advantages:

- EASY PLACEABILITY
- ASSURED STRENGTH
- WATERTIGHTNESS
- GOOD APPEARANCE

Authoritative methods for concrete design, specification and production are ACI (613-44) and ASTM (C94-47T) — both based on the water-cement ratio law. Pozzolith, also conforming with the water-cement ratio law, used with these methods produces the best, most economical results.

***Partial List of Stadia built with POZZOLITH CONCRETE**

University of Arizona Stadium
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E. Lansing, Michigan

Stadium Addition
Collingswood, N. J.

Stadium, Tiffin, Ohio

Allentown School Stadium
Allentown, Pa.

Hershey Stadium
Hershey, Pa.

University of Texas Stadium
Austin, Texas

Cotton Bowl, Dallas, Texas

Stadium and Bull Ring
Sports City, Mexico

Stadium, Havana, Cuba

Jai Alai Sports Stadium
Manila, P. I.

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — TORONTO, ONTARIO

Putting through 1500 phone calls at once - - - on TIMKEN® bearings

TO lay co-axial cable, designed to carry 1500 phone calls simultaneously, American Telephone and Telegraph uses a specially-developed cable-laying plow, pulled by crawler type tractors. An Allis-Chalmers tractor is shown in the photograph. When the going is unusually rough, several tractors are often used.

With Timken® bearings on tractors and plow, fewer delays on the job are experienced. Time spent in bearing lubrication and maintenance is negligible. The equipment lasts longer and works better.

Timken tapered roller bearings hold moving parts in rigid alignment, preventing excessive wear and insuring smooth operation. They're made from Timken fine alloy steel, and due to line contact between rolls and races, they have tremendous load-carrying capacity. Even under the toughest loads, their true rolling motion and smooth surface finish enable Timken bearings to operate freely, frictionlessly.

Timken bearings permit the use of closures which effectively retain lubricant. They take any combination of radial and thrust loads and normally last the life of the machine.

No other bearing can give your equipment *all* the advantages you get from Timken bearings—backed by 49 years of bearing research and development. When buying construction machinery look for the Timken-equipped symbol. When buying bearings, look for the trademark "Timken". The Timken Roller Bearing Co., Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

ALLIS-CHALMERS 20-ton Torque Converter Tractors and the 27-ton cable laying plow rely on Timken bearings at these points:
IN THE TRACTOR:
Bevel gear shaft
Final drive
Front idler
Support roller
Truck wheel
IN THE PLOW:
Wheels

Photograph courtesy Allis-Chalmers Manufacturing Company

TIMKEN BEARING CAPACITY RATINGS INCREASED 25%.

Since Timken bearings were last re-rated some 15 years ago there has been such a further and constant improvement in quality that we are now able to announce a 25% increase in radial and thrust load carrying capacity. This may make possible the use of smaller bearings with savings in bearing cost, material cost and weight. Engineers will be able to utilize he advantages of Timken bearings in more applications than in the past.

A new Timken Engineering Journal, now in preparation, will give you complete capacity rating tabulations. For further assistance, write us today.

TIMKEN

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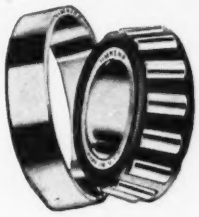
TAPERED ROLLER BEARINGS



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